A

Journey of Discovery

All Round our House.

1866

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PREFACE TO THE REVISED EDITION.

In presenting the "Interview" under a new title, it is necessary to explain the reasons which have induced the alteration. It may be thought by many, that after five editions of a book have been exhausted it would be hardly expedient to make an alteration in the title by which it had become popular. The publishers, however, resolved not only to enlarge the work, but by developing more fully *one* of its subjects, to give a definite character to the volume, and a title more suggestive of the contents of the work as a whole. Accordingly it was decided to substitute "A Journey of Discovery all Round our House; or, The Interview" for the original title; thus foreshadowing some of the contents, and identifying the book to older readers by its now supplementary name.

The object so ably carried out by the original editor of this work was to make it in every respect a worthy companion volume to that highly popular favourite, "Enquire Within upon Everything." That the result has been appreciated by the public is gratifyingly proved by the approbation of upwards of Three Hundred Thousand purchasers of "Enquire Within," and by the increasing demand for the companion work, now to be called "A Journey of Discovery."

Among the most attractive features of the present edition may be enumerated the theme of our title, "A Journey of Discovery all Round our House," which extends to a series of eight papers, conveying an amount of varied information, embodied in a novel, instructive, and interesting manner.

Such additions have also been made to this Work as the spread of knowledge and scientific intelligence rendered imperative. Many subjects entirely new to the general reader, have, on account of their relative influence in the economy of life, or on the social and moral welfare of the people, been introduced as both important and instructive.

Telegraphy—so far as it relates to that great social and scientific question, now so successfully solved by the laying of the Atlantic

Telegraph—has been duly considered. All the facts connected with the first attempts to link Europe and America by the Electric Wire, from the commencement down to the final consummation of the long-delayed scheme, will be found in the articles specially devoted to this subject.

Petroleum—in its natural condition, such as in wells, lakes, or artesian fountains; the springs of Western Canada, and the oil wells of the United States, with their products, paraffine, naphtha, fixed oil, aniline, and its beautiful dyes, form another series of what we trust will be found valuable Articles.

Gardening also, both as respects the Kitchen and the Flower Garden, for every month in the year, has engaged attention; and the first practical horticulturists and botanists of the day have been consulted, so as to render this department of the work instructive and reliable.

These, with Mineralogy, Meteorology, the Census, and Returns from the Registrar-General, form a *few* of the large catalogue of contents. In fact, every page of this volume contains something new, instructive, or curious, in Art, Science, Philosophy, Domestic Management, or social comfort.

The publishers have at great expense revised, enlarged, and materially improved the present Work, and by the addition of Games, Pastimes, and national Sports, striven to make it still more worthy of the patronage it has already received. They look with confidence to the public to reward their efforts to perfect in every way this new issue of an old favourite, and make "A Journey of Discovery all Round our House" a source of information to many, and of interest to all.

Twenty-four Volumes are now published as cheap companions of the "Journey of Discovery," which are enumerated as under. The entire Series contains upwards of SEVEN THOUSAND pages of closely printed matter. They are entirely original in Plan, executed with the most conscientious care,—and embrace the very essence of demonstrative Truth and inductive Reasoning. The Indices have been prepared with great labour, and alone occupy above 500 pages. A vast Fund of valuable Information, embracing every Subject of Interest or Utility, is thus attainable, and at a merely nominal Cost.

These Works are in such general demand, that the Sale has already reached

UPWARDS OF ONE MILLION VOLUMES.

1—3. "Daily Wants, The Dictionary of," a Cyclopædia embracing nearly 1,200 pages of sound Information upon all matters of Practical and Domestic Utility. The sale of nearly 100,000 copies of this Work affords the best evidence of its intrinsic value.

4—7. "Useful Knowledge, The Dictionary of," a Book of Reference upon History, Geography, Science, Statistics, &c. A Companion Work to the "Dictionary of Daily Wants."

8 & 9. "Medical and Surgical Knowledge, The Dictionary of," a complete Practical Guide on Health and Disease, for Families, Emigrants, and Colonists.

10. "Enquire Within upon Everything." This Work is deeply indebted for past favours. The sale of nearly Three Hundred and Twenty Thousand Copies affords ample proof of this.

11. "The Practical Housewife and Family Medical Guide," a Series of Instructive Papers on Cookery, Food, Treatment of the Sick, &c., &c.

12. "The Corner Cupboard," containing Domestic Information, numerous Needlework Designs, and Instructions for the Aquarium, Skeleton Plants, &c.

13. "The Family Save-all," a System of Secondary Cookery, with Invaluable Hints for Economy in the use of every Article of Household Consumption.

14. "Notices to Correspondents," a Work full of curious Matters of Fact; a collection of important Information on all Subjects, from real Answers to Correspondents of various Magazines and Newspapers.

15 & 16. "Life Doubled by the Economy of Time," and "How a Penny became a Thousand Pounds." The first of these Works teaches the Value of Moments, and shows how Life may be abridged and fall short of its true aim and happiness, by a careless indifference to trifles of Time. The second Work pursues a similar argument with reference to Money, which is the representative of all things of material Value.

17. "The Reason Why, Housewife's Domestic Science," affording

to the Manager of Domestic Affairs intelligible Reasons for the various duties she has to superintend or to perform.

18. "THE REASON WHY, GENERAL SCIENCE," a Collection of many Hundreds of Reasons for things which, though generally received, are imperfectly understood.

19. "THE REASON WHY, NATURAL HISTORY," giving REASONS for very numerous interesting Facts in connection with the Habits and Instincts of the various Orders of the Animal Kingdom.

20. "THE REASON WHY, GARDENING AND FARMING," giving some Thousands of Reasons for various Facts and Phenomena in reference to the Cultivation and Tillage of the Soil.

21. "THE REASON WHY, HISTORICAL," designed to simplify the study of English History, and to arouse a disposition to trace the connection between the Cause and the Event.

22. "THE REASON WHY, BIBLICAL AND SACRED HISTORY," a Family Guide to Scripture Readings, and a Handbook for Biblical Students.

23. "THE REASON WHY, DENOMINATIONAL," giving the Origin, History, and Tenets of the various Christian Sects, with the Reasons assigned *by themselves* for their specialities of Faith and forms of Worship.

24. "THE REASON WHY, PHYSICAL GEOGRAPHY AND GEOLOGY," containing upwards of 1,200 Reasons, explanatory of the Physical Phenomena of the Earth and the Sea, their Geological History, and the Geographical distribution of Plants, Animals, and the Human Families.

The attention of Parish Libraries, Village Reading Clubs, Mechanics' Institutes, and all other parties interested in the dissemination of sound theoretical Instruction and practical Knowledge on Religion, Science, English History, Domestic Economy, &c., is particularly directed to this Series of Popular and Valuable Books.

LONDON, *November*, 1866.

A
JOURNEY OF DISCOVERY
ALL ROUND OUR HOUSE.

FIRST JOURNEY.

THE FATHER OF THE FAMILY STATES HIS REASONS FOR UNDERTAKING THE JOURNEY.

A FEW days ago my boy returned from school, not merely for the Christmas-holidays, but with the intention of going no more to the educational establishment in which he had been for the last four years. When I tell you that, although I have four daughters, this is my only boy, you will be able to judge from what you have experienced yourself or witnessed in others, the pride I feel in this lad, the joy that it gives me to watch his progress from the simplicity of childhood to the intelligence of youth; and how anxious I am that he may reach the maturity of manhood, and be an honour to the name he bears, long after my own history, with all its errors and sorrows, has terminated.

The recent Christmas was to me and to my boy an era of great importance. I had arranged, in taking him from school, to place him under the tutorship of Dr. Renford, a gentleman of great educational acquirements, who devotes himself to the tutorship of two or three pupils, but never undertakes a larger number at the same time. I rejoiced to think that, in his fellow-pupils, my boy would find that companionship with youth which is so essential to the preservation of the genial qualities of the young heart, while he would receive from his tutor a more direct attention, a more individual watchfulness, than I could hope to obtain for him in a large establishment.

I had, therefore, arranged that, during the holidays, Dr. Renford should be a visitor at our house, chiefly for the purpose of reconciling my boy to the change, and to the person who was to be his future teacher; for, being a youth of warm attachment, he had become very fond of his old schoolmaster; and to part with some of his school-fellows had caused him indescribable pain. It is surprising how, in youth, the smallest incidents swell the tide of grief, and trifles, which a sterner acquaintance with the world enables us to completely forget, seem to plunge us into the depths of misery. I had considered and prepared for this, in the arrangements made at home, to cheer my pet boy during the holidays, and to wean him by degrees from old attachments.

But, in thus providing for the happiness of my boy, I did not anticipate the delight which I myself should find in the society of the amiable and gifted Dr. Renford, who, during the short time that he stayed with us, had really put *me* through the very process which I had designed for my boy. By his conversations upon things that were new to me, and by pointing out sources of mental gratification which, though close at hand, were utterly unknown to me, he had completely weaned me from erroneous opinions to which I had long foolishly clung, and had tutored me to a new discipline of the heart and mind, in a way that cannot fail to influence the soul. I will tell you how this influence came to be felt by me, although the incident which I shall relate is only one of many that occurred during the time that my friend, Dr. Renford, remained with me.

My young people, with their mamma, made up a party to go and see the Wizard—"the Great Wizard of the North"—as he was called. And I think that the night upon which they went was to be the last of the Wizard's performances at the Lyceum Theatre, prior to his removal to Covent Garden. I did not go with the party, my health being so delicate that I am compelled to avoid the night air. So Dr. Renford kindly did the amiable to the ladies, and away they went in cheerful expectancy of the wonderful feats they were to see.

The next day little was spoken of by my young people, but related to the wonderful feats performed by the Wizard. My wife was amazed: she had witnessed such unaccountable marvels that she almost wished she had not gone. She had slept unsoundly during the night, and when she slept she had dreams of some great magician in flowing garments bespangled with mysterious characters, leading her through mazes of cloud, and into caverns of oppressive darkness, that gradually dissolved, and revealed countless forms of beauty, which melted away before the darkness that rolled back like a velvet curtain, amid discordant yells and laughter, as if a thousand fiends had been set free to scramble through the blackness that prevailed.

The girls were almost as much excited and bewildered as their mamma. But my boy, my pet boy, seemed to have gone half deranged—so great had been the fascination of the Wizard's art over him. He did little else but walk about trying to devise some simple apparatus by which he might imitate the lesser tricks performed by the Wizard. Find him where you might, he would be sure to be standing behind inverted cups, with oranges underneath, pocket-handkerchiefs, hats, glasses, and cards, being strewed all around him. He eagerly turned over the pages of the Wizard's "*Shilling's worth of Magic,*" which he had purchased and brought home with him, and paced up and down the dining-room, looking up as if addressing an imaginary audience crowding around the walls.

It appears that, on the night in question, the portico of the theatre was brilliantly illuminated, not only with the ornamental gas illuminations, but with the electric light, and various transparencies.

As our carriage approached the theatre, its progress was arrested by the presence of a dense mass of people, whose up-turned faces receiving the livid brightness of the electric light, looked like a scene of real enchantment, and greatly added to the effect of what our party afterwards witnessed.

Upon entering the theatre, they found every nook and cranny filled. The Wizard appeared, and commenced his performances. Articles disappeared and appeared again in the most surprising manner, and in the most unlooked-for places; handkerchiefs were torn up, and mended again in the most miraculous fashion; watches were fired from blunderbusses through men's heads, and neither head nor watch any the worse for the operation; pigeons flew out from empty boxes; and, from a portfolio of not immoderate dimensions, were produced several children, a live goose, a large trunk, not to mention an infinite variety of smaller articles; the bullet was caught in its flight from the gun; tables were rapped upon; and clairvoyance illustrated; in fact there was no department of jugglery—whether jugglery proper, or that which disguises itself beneath a scientific cloak—which was not thoroughly illustrated.

When the time came to talk seriously to my boy about the future arrangements for his education, and to bring him and the Doctor into friendly communion, I found him so pre-engaged, so utterly absorbed in the fascinations of the Wizard's art, that it was difficult to obtain his serious attention even for a few moments. And as, every now and then, he succeeded in the performance of some simple trick, he summoned his sisters to witness it, while they, by the natural expression of their surprise, only encouraged the young conjurer in his devotion to the mysterious art. I became, therefore, alarmed lest the opportunity I had so long planned, of bringing my boy and his tutor together under favorable auspices, should pass away. I therefore called the Doctor aside, and advised with him upon the subject. "Oh, never fear," said he, "the enthusiasm which you witness on the boy's part in these trifling matters is the best evidence that can arise of his earnestness in higher matters, as soon as his intelligence—his love of the marvellous—shall be directed toward the highest objects in which they can find gratification."

I was delighted to hear this; though my worst fears were again aroused when, in compliance with my request, the Doctor proceeded to ask my boy what profession he thought he should prefer. I shall never forget my boy's reply:—"I should like to be a wizard, sir!" My boy a wizard! he who is to bear my name down to posterity—a conjurer, a juggler, a dabbler in legerdemain, cheating the senses of the people by the most palpable and silly tricks! My cheek, which has long been pale, suddenly became red. But I stifled my feelings, though I believe the Doctor read my emotion.

I rose, and by the aid of my eldest daughter's arm, took a walk round the garden. The sun just at this moment burst forth, and glistened upon the fir and bay trees that waved their ever-green branches in the cool breeze; whilst the red berries shone, like coral beads, upon the dark stem of the holly.

When I returned, I was somewhat disconcerted immediately I entered the room, to be invited to witness a new trick, which my boy had just discovered. I noticed that the Doctor was absent, and I wished that he had been there that he might support me in the trial I had to undergo. For I confess I had grown morbid under the circumstances, and wished the Wizard at Jericho.

However, I determined to suppress my dislike of the entertainment, and to throw myself upon the consolation afforded by the Doctor when I had named my anxiety to him. So I suffered the conjuring to proceed. I was told to ask any question by writing it upon a slip of paper, and by holding it against the circular mirror which hung against the wall, an answer should be received by raps upon the table at the opposite side of the room.

I therefore wrote upon the paper, "What is my age?"

My boy immediately said to the table, "I command you to answer!"

And forthwith, to my great surprise, the table gave forty-nine distinct knocks. And what surprised me more was, that the table stood quite alone, and that my boy never went near it, but kept walking up and down waving his hands, as if working some magic spell.

I then proceeded to ask numerous other questions, all of which, to my amazement, were answered quite correctly by the mysterious table. I confess that I began to feel puzzled, I might almost say interested, and to forget for a moment my antipathy to jugglery; when, all of a sudden, the heavy table-cover, which had been drawn somewhat over the front, slid off from the smooth mahogany surface, and there, to my utter surprise, I beheld the Doctor, my learned and estimable friend, on all fours under the table! He had been acting as the confederate of my boy—the latter was quick enough to read the questions reflected in the mirror, although their image was reversed, and while I was looking at the mirror, or at the top of the table whence the raps proceeded, he was signalling with his foot to the Doctor the number of raps to be given.

To describe the ludicrous scene that ensued—the screams of laughter from the girls, the confusion of the boy, the Doctor's embarrassment, mamma's dignity, and my own perplexity, is quite beyond my power.

Some time after, however, I was pleased to observe that my boy was never easy, unless he was by the side of his future tutor; that a companionship had sprung up between them which seemed inseparable—and which was the very consummation I had wished, but knew not how to obtain. And I now discovered that the Doctor had, with a true knowledge of human nature, condescended to act the part of my boy's confederate in an innocent and silly trick, only the more securely to obtain a hold of his affections, and to lead him on to things worthy of his attention.

But what has this to do with the "Journey Round our House?". Everything, as you shall presently see. By accident I overheard a conversation between my friend, the Doctor, and my boy. The Doctor was telling him of the means by which many of the Wizard's most celebrated tricks are performed, and showing that they were merely mechanical inventions with which the talent and the power of the Wizard had nothing at all to do—that there were men who were acquainted with the laws of natural philosophy who invented these tricks for the Wizard, that the Wizard was merely the buyer of those inventions, and that any one who could afford to pay the same price for the apparatus could perform those tricks quite as easily as he. The Doctor then went on to speak of the Magic of Nature, which everywhere around us is hourly presenting phenomena far more wonderful and worthy of our attention than the Wizard's tricks, which were a mere burlesque of noble inventions and sublime operations. He pointed to the fire, saying that a piece of coal placed thereon—a solid, black and heavy mass—would soon disappear. It flew up the chimney. Was there anything that the Wizard had done more wonderful than that of causing a solid body to take wings and fly away? People were content to call this combustion, or burning. But what did these terms mean? Could people comprehend them? Why did the kitchen maid, when she made a fire, put paper beneath wood, and wood beneath the coal, and then set fire to the first? What became of the several scuttles of coal that in the course of the day disappeared? When the girl drew a lucifer match across the sand-paper on the bottom of the box and produced fire by a single touch, she performed a feat in which there was as much matter for wonderment, as in the most mysterious trick performed by the Wizard.

But people passed over these things without notice, and were content to have their senses cheated by a juggler rather than be improved by the greatest teacher of all—Nature. Why (he asked) does gas burn without a wick, while oil and candles require that aid to support their combustion? Why, when you set a kettle upon the fire, does the water boil, and rush forth in the form of steam? Where goes the steam? What becomes of it at last? What is heat? Why, though you sit far away from the fire, does the heat reach you? How does it come? Upon what does it travel? When you say you feel the heat, *how* do you feel it? In what way does it affect you? What is light? How comes it flying through the wonderful expanse of heaven, from the far-off sun, to cheer our humble dwellings? What is glass through which the light passes? Why does the light, as it travels through the lustres upon the chandelier, issue forth in rays of various colours, giving rich tints to the objects upon which they fall? Why does the mirror upon the mantel-piece reflect with exactness the image of every object that appears before it? What is the difference between wood and iron? Why does the one burn and the other not do so? What supplied the damask curtains that hang by the window, and the carpets that lie upon the floor? Whence came their brilliant colours? How were those tasteful patterns woven into the texture?

The Doctor, to my great joy, had completely absorbed my boy's attention by these questions upon the most simple problems; and what is more, he had equally absorbed *mine*, and made me feel how little I understood of the objects and of the phenomena observable even within the walls of my own dwelling. It was for this reason that I resolved to make a Journey of Discovery all Round our House.

We are determined to learn something respecting everything that the house contains, whether it be a simple grain of salt, or a thread of silk, or an elaborate piece of tapestry, or the burning of a candle, so that, "even the singing of a kettle shall be unto us a song of wisdom." We should like the reader to go with us through our journey.

MORAL FOR JANUARY.

Saxon or Welshman, Scot or Celt,
Name, by right name, this month so merry,
Pronounce it just as it is spelt,
And never call it Janniwerry.

Hint on Evening Parties.—A young lady, after dancing all night and several hours longer, will generally find, on consulting the looking-glass, that the evening's amusement will not bear the morning's reflection.

Winter advice to Young Ladies.—Thin shoes lead to damp feet; damp feet bring on a cough; a cough may terminate in a coffin.

MORAL FOR FEBRUARY.

Get born upon Feb. 29,
For Leap years come but one in four;
A toast's a thing that spoils one's wine,
You save three-fourths of birthday bore.

Hint on Health.—For air and exercise too many young ladies resort almost exclusively to the piano.

Contagion. — Several young ladies who were accustomed to sit under a popular preacher, became, consequently, much affected.

MORAL FOR MARCH.

A bushel of March-winnow'd dust
Is worth, they say, a monarch's ransom;
Let Bomba save it — mobs don't trust;
For such a life such price were handsome.

What is a Baby? — Why a Baby is a living I. O. U., a "little Bill" drawn upon Manhood, that is only honoured when it arrives at maturity.

The Longest Day. — The day before that of your wedding will probably be the longest day of your life.

MORAL FOR APRIL.

The First's a day when folks are sold
By gamesome youth released from school;
Neither at this time, reader bold,
Nor any other, be a fool.

Hints for the Nursery. — The treatment of a new-born child should be kind, but not cordial—and especially not Godfrey's cordial.

MORAL FOR MAY.

Welcome are all its flowers and bowers,
As guests when one has bidden 'em;
But you're not welcome to the flowers,
Mind this, when down at Sydenham.

Economy in Beating Carpets. — When you purchase your carpets, take care to buy one that is infinitely superior to all the rest; for such a carpet will beat every other carpet you have in the house.

Paradox of Insect Life.—The habits of the spider are stationary. He seldom travels far from the locality in which he first saw the light. It is curious that the spider should travel so little, and yet be continually taking flies.

MORAL FOR JUNE.

A rhyme the word suggests will suit,
No special moral's taught by June:
If you're an ass, and blow a flute,
Why, do not blow it out of tune.

For Better and for Worse.—A Philosopher who had married a vulgar but amiable girl, used to call his wife "Brown Sugar," because, he said, she was sweet but unrefined. Another, whose wife was affectionate and stout, was accustomed to denominate her "Lump Sugar."

MORAL FOR JULY.

Off to the Rhine, the Rhone, the Po;
To Belgic flats or Switzer hills,
Off, but take off, before you go,
Something, with cash, from tradesmen's bills.

MORAL FOR AUGUST.

You may buy grouse, and need not say,
Whether with lead or coin you got 'em;
But if you buy them, do not, pray,
Tell naughty fibs, and say you shot 'em.

Homely Worth. — Many flowers are expressive of the most delicate sentiment, but which of them has the heart of a cabbage?

MORAL FOR SEPTEMBER.

O Cockney, if with the Perdrix,
"A day" is offered, Cockney O,
With fire-arms don't be playing tricks,
Don't shoot — and, better still, don't go.

MORAL FOR OCTOBER.

The party who but drinketh *eau*,
And unto bed retireth sober,
Shall fall (a punch-fraught song doth show)
Like leaves, and leave us in October.

MORAL FOR NOVEMBER.

Of things that Civic magnates do,
As stuffing, spouting — O beware,
Or you may be degraded to
An alderman; nay, down to Mayor.

MORAL FOR DECEMBER.

With Christmas-tide the twelvemonth ends,
Give all unkindly thoughts the sack,
Embrace your foes, forgive your friends,
And buy your — *Punch's Almanack.*

DIFFERENT KINDS OF COAL.

1. *Dry or Cubical Coal.*—This species is very black and shining. It generally comes from the pit in large masses; and it burns freely with much flame and heat. This is by far the best coal for blast-furnaces, but is not so desirable for domestic use.

2. *Steam-Coal, sometimes called "Smithy-Coal."*—This species, which ignites readily, and produces comparatively little smoke, is much valued for its excellence in the furnaces of steam-boilers. It contains more carbon than bituminous coal, and more hydrogen than anthracite.

3. *Cannel or Gas-Coal.*—This species does not shine, but has, on the contrary, rather a dull appearance before it is ignited. When burning it emits a most brilliant flame. As the roots of fir are used instead of candles in the winter nights by the peasantry in some parts of Scotland, so this coal is made to answer the same end in some districts of England, and also in the South of Scotland. Hence its name, *Cannel,* the Lancashire word for candle. *Cannel Coal* is almost invariably used in the manufacture of gas.

4. *Bituminous Coal.*—This species swells and cakes when heated. It is more abundant than any other kind and is well adapted for household use. There are 133,000 square miles of it in the United States, and 8,000 square miles of it in Britain. Bituminous coal, in a raw state, is not suitable for the blast-furnace.

5. *Anthracite Coal.*—This species is very black, very brittle, and very shining. When sold, it is generally broken up into small pieces, but there is not much dust. It produces almost no smoke, and scarcely any ashes. Where it can be obtained at the same price as bituminous coal, it is more economical for domestic purposes. Even where it costs more, it is good management to mix the bituminous and anthracite together. The latter, by its great heat, consumes the smoke of the former, and thus saves fuel. Two scuttles ought to be used in such a case, one for each kind of coal: at all events the bituminous coal, in order to effect the saving, must be put below the anthracite, so that the smoke may have to pass through the glowing embers. Anthracite coal is abundant in Wales and Ireland. In Ireland it is called *Kilkenny* coal, and in Scotland, *blind* coal. It usually contains about 90 per cent. of pure carbon. This sort of coal is especially valuable to maltsters, brewers, and millers: because it throws out intense heat, and may be said to be almost without smoke. But it is also decidedly economical (where the price is reasonable) in stoves and house-grates. There being 90 per cent. of carbon, only 10 per cent. is left for smoke and ashes; whereas, in some sorts of coal, the residiuum of ashes amounts to 40 per cent.!

HINT FIRST.—Put a piece of iron plate, which you may get at any foundry for fourpence or sixpence, across the bottom of your grate, reaching within an inch and a half of each side, and projecting about an inch and a half in front. There will thus be one narrow opening for air between the last two bars of the bottom grating at each end of the plate, while the remainder will be closed. The draught upon your fire will thus be almost entirely from the front, and you will soon discover, by experience, that the present method of constructing grates, by which the whole bottom admits air through the bars, is wrong in principle and extravagant in practice.

HINT SECOND.—When about to make a fire, let the grate be first half filled with common Newcastle coals. Above these place some shavings or waste paper, and then a few dry sticks or splinters, or bits of charcoal or broken peat. Lay on the top a few of yesterday's cinders, and, lastly, some lumps of coal. These must not be shovelled in at random, but laid on carefully by hand. Apply a match to the shavings or paper, and in fifteen minutes you will have a cheerful fire. At first, servants will object to this plan, and even ridicule it. They have always been accustomed to light a fire at the bottom of the grate, and it is difficult to persuade them to try the experiment of lighting it from above. They cannot believe that the fire will work its way down into the mass of dead coals. One fair trial, however, will satisfy a housemaid on this point; and she will soon find that it not only saves her master an incredible quantity of coals, but that it also saves her, what she may, perhaps, consider of more importance, a vast deal of trouble. The bell will be rung less frequently for the coal-scuttle; the fire, if properly made and reasonably attended to, will never require to be relighted during the day; there will be no soot flakes on the furniture, and so little even in the chimney, that the services of the sweep will be seldom required. But if you would have as little smoke as possible, take heed to what follows.

Hint Third.—After the fire has been made in the manner just described, let it be replenished during the day with *anthracite*, not bituminous, coal. Anthracite yields no smoke, and burns with such an intense heat that it consumes any smoke which rises from the pitchy Newcastle coals at the bottom of the grate.

Hint Fourth.—Abolish poker and tongs. These time-honoured implements are worse than useless when a fire has been made on the smoke consuming principle. Allow no poking, unless you are willing to have your coals wasted and your fire spoiled. Instead of the burnished, clumsy, steel biped, which is always in the way, get a blacksmith to make for you a light instrument like the sugar-tongs, about a foot long, and without hinge or joint. If you are a bachelor or maiden lady, fond of sitting by the fire, and rarely pressed for time, you will find it amusing, as well as economical, to pick up a lump of bituminous coal every now and then, when there is an opening in the *lower* part of your fire, and thrust it in among the red embers. Every time you do this, you will have a beautiful illustration of the smoke-consuming principle, adopted in a more costly way by Franklin, Cutler, Arnott, and others. The black lump will immediately begin to puff out crude gases and smoke, which ignite and are consumed before they have time to reach the top of the fire. You will find the projecting inch and a-half of the iron plate in the bottom of your grate very convenient for the purpose of introducing bits of coal in this manner:—Just lay the coal on the edge of the plate, and push it in without disturbing the fire. It is a good plan, however, to thrust in a lump wherever there happens to be a gap in the burning mass.

Hint Fifth.—Whatever kind of coals you use, never put on much at a time when replenishing the fire. Even with Newcastle coals, you will have comparatively little smoke, if you put on only a thin layer about once in half an hour or so. Busy people would grudge this trouble; but any one who has leisure, and enjoys a good fire, would do well to adopt this hint, especially if anthracite coal cannot conveniently be obtained. The fire will continue clear and hot, and the expenditure of fuel will be very much lessened. When a large shovel-full of bituminous coals has been thrown on the fire, there is always a dense smoke for some time; but when only a thin sprinkling is put on, if the fire below is good, the gases emitted will produce flame and heat.

Hint Sixth.—Mrs. Sarah Hale says—and what she says may be depended on—that "a saving of nearly one-third of the coal consumed may be made by the following easy means":—Preserve the coal-ashes which are usually thrown away as worthless. When you have a sufficient bulk, add to them an equal quantity of small coal or coal-dust from your cellar, and then pour a little water on the mixture. Use this compost at the back part of your fire. It will burn brightly and pleasantly; only a little dust will remain unconsumed; and thus the trouble of sifting will be saved besides.

Hint Seventh.—Another excellent suggestion by the same American authoress:—Mix one bushel of small coal, or saw-dust, or both, with two bushels of sand, and one bushel and a half of clay. Take water, and make the mixture into balls, and pile them up in a dry place till they become hard. When your fire burns brightly, put some of them on the top, and they will give out a strong heat.

HINT EIGHTH.—If you live near a gas-work, you may buy the cinders, which are neither more nor less than coke, at the rate of fourpence or sixpence for a large sack. No cheaper fuel can be obtained in a town. By making your fire as directed in "Hint Second," and replenishing it with these gas-cinders, you will find that for warming or cooking, the expense of fuel is *less than one half*. The writer has tried the method, and been astonished at the saving which is so easily, pleasantly, and comfortably effected. The cinders answer every purpose of anthracite coal, and they are very much cheaper. Perhaps there is no means of consuming smoke so thoroughly in a common grate.

Gas-cinders vary much in quality, according to the sort of coal from which they are made. When made from Scotch coal they are very good. Choose those which are of light weight and dark colour. Heavy lumps of white or greyish cinder give less heat and scatter a good deal of dust.

THE FOLLOWING HINT IS OUR OWN.—When going to bed at night, the kitchen fire being nearly out, take a quantity of small coal, and mixing it with the ashes under the grate, wet it moderately, and fill the grate with it. It will extinguish the fire, and contribute to safety in that respect, while the heat of the fireplace will be just sufficient to cake the whole into a coke-like mass. In the morning take the poker and raise it all out, and you will have sufficient fuel to assist in lighting a clear fire in every room in the house.

BELIEF.—I would rather dwell in the dim fog of Superstition than in air rarified to nothing by the air-pump of Unbelief; in which the panting breast expires, vainly and convulsively gasping for breath.—*Jean Paul*

WARDIAN CASES.

MR. LINDLEY'S OPINION OF THEM.

As the Wardian case is largely employed in horticulture, especially in the decoration of sitting-rooms, it seems desirable to point out in this place what are its real merits and defects. When Mr. Ward first remarked a grass and a moss growing inside a damp bottle, he merely saw what gardeners had witnessed for a couple of centuries at least. He beheld the propagator's bell-glass with its edges dipping into wet sand, a close cavity with transparent sides, and an interior possessing an uniform and unchangeable degree of humidity. Thirty or forty years since, and probably long before, the same principle was employed in the drawing-rooms of the wealthy for the preservation of the freshness of cut flowers: the flowers were placed in a vase, the vase stood in water, and a bell-glass, dipping its edges into the water, covered the whole.

There is not the smallest difference in principle between these old contrivances and the modern Wardian case. But all such plans were merely preservative; no one thought of cultivating plants in close cases, though they found the latter invaluable for keeping plants alive. A cutting under a bell-glass was surrounded with moist air until it had formed roots; but the moment the action of roots was secured it was transferred to the open air. What Mr. Ward did, when he proposed the case that bears his name, was to contrive a portable bell-glass and its supporter, made of materials strong enough to bear the rough usage of a sea voyage. He demonstrated the defects of the old travelling greenhouses, and suggested a remedy, pointing out at the same time upon what principles the remedy depended. That principle was—1st, to expose plants to light, and—2nd, to insure their being constantly surrounded by a medium damp enough to keep their system in a state of activity.

The old travelling greenhouses, or plant cases, were open at the joints, and the water originally contained in them quickly evaporated, leaving a mass of parched earth in which no vegetation could long survive; they were also glazed with talc, or oyster-shells, or other half-opaque materials, through which no such amount of light could pass as plants require for the preservation of their vitality.

When properly constructed, the Wardian case answers perfectly as a means of transporting plants to great distances. It also has its value in places where the air is filled with floating soot or dust; or where it is naturally too dry for vegetation, as in sitting-rooms. There the lives of certain kinds of plants may be maintained for a long period of time, with the appearance of health; shade-loving races, such as ferns and mosses, will even thrive there; and others, like dry crocuses and hyacinths, which have been previously made ready by the usual processes, out of doors, may be led to blossom in perfection for a season, or in some instances for more.

It is asserted, indeed, that plants have been known to grow well and flourish in Wardian cases. To that statement I lend an incredulous ear. It will be always found, upon inquiry, that such cases are opened daily and ventilated freely, and thus, or otherwise, relieved from the moisture with which the air is saturated. But those are not Wardian cases at all; they are merely greenhouses on a small scale, in which plants grow well or ill, according to the care with which they are managed.

A Wardian case demands neither care nor skill; its operation is essentially automatic; it is its own gardener in every way. The moment its structure enables the possessor to give it daily attention—in short, to cultivate the plants within it, it ceases to be Wardian, and may as well be called by any other name, as has been already shown. Plants cannot be cultivated well in the absence of free access to air in motion. The more rapid the motion, within certain limits, the higher the health of plants, and *vice versa*. This is the foundation of good gardening; and it is precisely this which is unattainable in a Wardian case. The latter is the opposite of a natural condition; but plants demand all the resemblance to natural conditions which is to be secured by art. Direct, constant, and unrestrained communication with air, perpetually striking and then quitting them, is as necessary to a plant as to an animal; and that the Wardian case is intended to render impossible. It is not, indeed, too much to add that so far as gardening, properly so called, is concerned, the Wardian case has done nothing more than was effected years before it was suggested. As a convenient means of enabling plants to support existence under difficult circumstances it has value; and that is all. In short, it is to plants what *tripe de roche*, bark-bread and fern-root, are to man—a means of prolonging life under difficult circumstances.

Nature no more causes plants to grow in half air-tight rooms than amidst rays of coloured light. In the natural world vegetation subsists in its greatest activity in the presence of white light; red light, and yellow light, and blue light are unknown; and if green light occurs it is only in the recesses of deep forests, where little is to be found except fungi, or mosses and ferns. So it is with unventilated places; they are the exception to the natural law, which declares that living things shall have access to air. The lowest orders of animals and the lowest of plants thrive, indeed, in such localities, for all places seem to have their allotted inhabitants; but the great world of vegetation knows of no healthy existence, except where the air moves freely around it. In suffocated places we find lean and sickly races, too weak to stand alone, and struggling to reach a better atmosphere; these places are the Ward's cases of the wilderness; natural accidents from which all things endeavour to escape.—*Lindley on Horticulture.*

Woman.—Nothing sets so wide a mark "between the vulgar and noble seed" as the respect and reverential love of womanhood. A man who is always sneering at woman is generally a coarse profligate, or a coarse bigot, no matter which.

GARDENING FOR JANUARY.

The Flower Garden.—Commence your floricultural year by laying out a plan of your garden, and enter in a memorandum-book a synopsis of your intended operations. Leave room in the margin for the dates of each sowing,—a remark that will also apply to your vegetable garden, whether it be large or small. Purchase at all times the best of seeds, and obtain them of nurserymen of good standing and character.

In this month sow dahlia seeds for new sorts; mignonette and ten-week stocks in boxes or pots, on a slight hot-bed; sow some hardy annuals, such as cockscombs, amaranthuses, &c., and prepare some composts under cover, ready for the principal sowing next month. When there is the convenience of a vinery at work, commence about the last week in the month to pot off from the store-pots the plants intended for bedding out, beginning with scarlet geraniums and other free rooting varieties, leaving verbenas and other more tender bedding plants until next month.

Plants reserved in the autumn for the purpose of furnishing spring cuttings, such as heliotropes, fuchsias, lantanas, cupheas, verbenas, and lobelias, should be brought into heat to start. Have a bed ready for striking these cuttings. Protect tulip beds with matting and leaves. Top dress auriculas in pots or borders with compost. Plant ranunculuses in pots and frames to flower in April. Place lilacs in forcing-houses in pots and tubs. Bring rhododendrons into the forcing-house, in tubs, to flower early. Edge flower-borders with box, thrift, London pride, daisies, polyanthuses, or pinks. Protect anemones and ranunculuses by matting or leaves. Attend to neatness in the grass and the borders along the principal walks; trench up all vacant beds, adding decayed leaf mould where necessary; thin out, and in seasonable weather commence digging shrubberies. When hyacinths are showing through the earth, cover them over with light litter or leaves.

You cannot be too forward with your work, for, as a general rule, both in kitchen-garden operations as well as in floral, delays are dangerous; better be a week too early than a day too late. By removing all dead leaves from your walks, and dead plants from your beds, and keeping your gravel walks clean, you will prevent the spread of vermin, help to destroy the growth of slugs, and leave your hands unfettered for future operations.

Kitchen Garden.—Having prepared your ground and arranged your plans as suggested above, commence your annual operations in the kitchen garden by sowing some early peas; there are several kinds, but we have seldom found one to surpass Sangster's No. 1, although some practical gardeners prefer the Daniel O'Rourke and the Prince Albert for this sowing. Mazagan, or early Lisbon beans, should be sown about the second week in this month. In open weather sow onions, on a light, rich, loamy soil,—if prepared with night-soil a fortnight previously, so much the better.

Sow radish on a warm border, also lettuce in every variety in warm borders, or under hand-glasses, to transplant them when of sufficient growth. Sow early carrots in a warm border, to be ready for use in April. Take up endive, with all the earth that can be retained, and place it in a back shed where there is light, or in frame where it will be preserved from damage. Raise small salad on a slight hotbed, in pots or boxes. Transplant cauliflower plants from small to large pots, and keep them in a cool frame. Put out cabbage plants to succeed the autumn-planted crop. Plant potato-onions in shallow drills, and earth them up as they grow.

Have all your land not in use dry and trenched, and let your manure be mixed up with it as you ridge it: manure is not worth a rush until it is *decomposed*, and it takes at least two months to bring the best manure into that state. If your hedges are old, splash them down. All cold esculents may be sown. Pot strawberries, and they will come early. If the weather prove frosty, leave most things alone; if it turn out damp and muggy, you may have your hands as busy as bees in looking after the slugs.

GEOLOGICAL FACTS.

GRANITE.

THE different rocks and strata that cover the earth's surface may be arranged, as respects English geology, under the six following heads:—1st, primary; 2nd, intermediate, or transition; 3rd, secondary; 4th, tertiary; 5th, basaltic and volcanic; 6th, diluvial and alluvial. These layers of rock differ from each other not only in the nature of the ingredients of which they are composed, but in the manner in which they have been formed; some rocks having a uniform crystalline structure, and others being composed of the fragments of older rocks firmly compacted together.

Primary or Primitive Rocks are so called from there being no fossil remains of animals or vegetables, nor any fragments of other rocks found embedded in them. Rocks of this class are extremely hard, and the minerals of which they are composed are frequently more or less crystallized. They are found in immense masses or beds, and form the *lowest* part of the earth's surface with which we are acquainted, and not only form the foundation on which the five other series are laid, but in many places pierce quite through all the incumbent strata of rocks, and often crop out from the highest tops of Alps and mountainous districts. Granite, which belongs to this class, occurs in masses of vast extent, and is composed of such minerals as felspar, quartz, and mica, and derives its name from having a coarse *granular* structure. London and Waterloo bridges, and the paving-stones of the street, are examples of the commonest varieties of granite. Granite contains many minerals either embedded in the rock or traversing it in veins; the principal of these are quartz, crystal, shorl, topaz, garnet, fluorspar, emerald, &c. The three minerals of which it is composed vary greatly in their proportions in different granites, and often in the same mass, giving rise to many varieties. In the Cornish granite the felspar is white, and the mica appears in scales, having a glistening, semi-metallic lustre; while the quartz is of a light grey colour, with a vitreous or glassy appearance. In Scotch granite, however, felspar is generally of a reddish brown, and the mica not unfrequently black and shining, and may be easily divided into scales; this circumstance distinguishing it from *hornblende*, which, of a dark green or black colour, is sometimes intermixed with granite.

In England, granite is chiefly found in Cornwall, Devon, Worcester, Leicester, Cumberland, and Westmoreland, at the base of Skiddaw, while in Scotland and Ireland it covers a considerable extent of country. The erudite Mr. Bakewell, in his Geology, is of opinion that the granite that just makes its appearance on the western side of England is continued under the Irish Channel, rising in the Isles of Man and Anglesea, and finally in the counties of Dublin and Wicklow. Huge blocks or boulders of granite are found in the beds of some of the rivers in the North Riding of Yorkshire, and in clay pits in Lancashire and Cheshire, at a great distance from any granite beds or mountains. Metallic veins are not often found in granite; tin in Cornwall and Saxony, and iron pyrites, forming the chief exception to the rule.

KING CHARLES'S NEWSPAPER.—This is a curiosity, if only to illustrate the rapid strides made since the year 1679 in literary productions. Among the curious paragraphs are the following:—

> "These are to give notice, that during His Majesty's being at Windsor, there will go a post thither every evening from the General Letter Office in Lomburd-street."

> "The masters of His Majesties cock-pit do desire all gentlemen that have their game, to send in their cocks to the pit at Newmarket in such seasonable time as that they may be made fit to fight; they intending to begin the cock-match on the 15th March. And there shall be feeders ready to take care of their cocks.—February, 1679."

THERE is no wealth without health; no health without contentment.

WHO IS MASTER, MAN OR BEAST?

Elephants are sagacious, and have uncommon strength; lions and tigers are both fierce and strong; foxes are cunning; apes and monkeys try their hand at man's doings; but what does it signify? Did you ever hear that the beasts, with all their powers, united their endeavours so as to drive a number of human beings into one of their dens, there to feed, poke, and show them off?—or that they attempted to fatten them as meat, or train them as labouring slaves?

The fact, you know, is exactly the reverse of all this.

Q. Not always the reverse, surely; animals do sometimes catch men, and eat them up alive.

A. That does not alter the matter I am speaking of. The beast overpowers the man, as a falling tree, or a wave of the ocean, may do; but it cannot be said that these become the man's master, neither does the tiger become his master even when he bites him in two; he has never *ruled* the man, he has never compelled service from him; neither can the tiger wait behind a bush, and kill his man without approaching him.

See, now, what man has really done with animals. See, not only the flocks and herds, and horses—all the cattle of the land—as much under the dominion of man as his own children are—nay, a great deal more; but behold the most enormous, the most fierce, those armed with deadly weapons, all caged like birds, fed, and trained, and made to fear the keeper, whose body would not be a mouthful amongst them,—one whom the least of them could snap up as we would a kitten, but before whom they cower in awe, not daring to disobey him!

Q. Oh, but they do snap up their keepers sometimes!

A. Yes, but that is when the keeper forgets his proper manner towards them, and trifles with the conditions on which alone he can manage them: he may beat them till they howl, if needful, but he must not trick them, nor tamper with their tempers. When we see creatures like those which are the terror of the tropics, crouched under the wand of a keeper—when we find that a whale, which is bigger than a thousand men, is hooked, and landed, and skinned, and carved by a boat-full of people—this looks very much like mastery, quite like the superiority of man.

And did you ever see a little child leading a horse?—a little fellow sitting on the back of the huge creature, and guiding it away from the herbage it would like to crop—away from the pond where it really wants to drink?—Yes. Of these powerful animals it is even now true, that "a little child can lead them!"

All this, you know, was expressly promised to man by God himself:—"And the fear of you and the dread of you shall be upon every beast of the earth, and upon every fowl of the air, upon all that moveth upon the earth, and upon all the fishes of the sea; into your hand are they delivered." (Gen. ix. 2.)

Well, now, let us see what man has to do before he can make use of the gifts of Nature that are placed before him. The materials, we have seen, are of three general sorts, and man's wants, we may say, are also of three general kinds: we have animals, vegetables, and minerals; and we require food, clothing, and shelter.

Suppose, now, all these things in a state of nature, and you a poor, hungry, houseless, uncovered wretch, but very clever indeed, placed amongst them. There are wild bulls careering along the plain, wild goats scrambling up the rocks, and, so far from acknowledging your superiority at that moment, that—see! they are looking down upon you! Well, catch and eat them; you have free leave.

And there are the wild vegetables, too, which cannot run away; and fruits, and berries, and corn-seeds, here and there: taste, and eat them. Oh, they are growing amongst thistles and prickles, very inconveniently! And, ah, they are very sour, austere, bitter, and husky!

You eat a few, but you are not half-satisfied; and, besides, you are shivering with cold. Well, that sheep has a *great* coat on, which he really does not want: try and ease him of it. Dear me, how tiresome!—he sets off scrambling through the thickets, frightened at the sight of you! Ah, now it rains!—hail-stones come pelting down—the wind rattles them in your face: get under a tree, that is a little better, but it is rather an inclement home!

Well, cut the tree down, split it into boards, build yourself a house. But you have no tools! There is iron in the mine, but where is the mine?—in another part of the country! You sit down dejected, helpless, and famished; you obtain a little uneasy sleep, till the wild animals disturb you; the pigs and foxes put their noses to your face, and have a smell at you; they grunt or bark in your ear, and then they trot away. It is very unpleasant; up you jump, and climb a tree—a monkey is there before you—he gibbers and pelts you down!

"This will never do!" you say. So you set your brains to work, and now find a new use for your hands. Somehow, you build yourself a hut; you procure a fire; the smoke that issues has a savoury odour in it; there is cooking going on, and you are a little better off.

The fact is, that until man has made use of his special powers and faculties, which are the best gifts of God to him, he must be a wretch. He cannot live as the beasts do, nor share their competence; for, though Nature waits upon them, and gives them all their meat in due season, she will not do so by man. She says to him—"There are all sorts of things provided for your use, but they will not come to you; you must up, and be doing, and procure and prepare them: YOU MUST WORK."

Well, man has taken the hint, as I said before. See, now, the miners, the founders, the smiths, the artificers in all kinds of wood and metals. Man has obtained tools, and there he is, without ceasing, digging, and heaving, and blowing, and hammering, and driving, and all the rest of it. Men do not sleep under trees now—at least, not sensible men, under whole ones: the sawer has worked his way through and through the mighty oak; and the builder, with his beams and boards, has already caged himself in, and has room for a score of people under one roof.

And the architect, not content with this, rears a mighty edifice to be seen from far, and for those afar off to come and see, and to perpetuate his name to future ages. Where did he find those very convenient square blocks of stone? Oh, peep down yonder at the foot of the craggy steep, where works the mason. With patient diligence he sits, pushing and pulling his long toothless saw through the shapeless masses. Did I say *he?* Hundreds are at the work; and the rock, which Nature had piled 'mid the darkness of chaos, is taken down by man that he may rebuild it at his pleasure. Man can do all this, for now he is no longer a famishing wretch, contending with the beasts of prey for his meal: his food is secured; the husbandman has learned to plough, to sow, to reap, to gather into barns.

And now the beasts, which once grinned at the roaming savage in contempt, come lowing and bleating to his gate, asking to partake of the benefits of this state of things; they expect here their daily food and nightly shelter. For this they lend him their mighty strength, yield him their own bodily substance; they give up their rugged freedom, and in exchange they acknowledge MAN THEIR MASTER!—*Jefferys Taylor's Glance at the Globe.*

AN ODD NOTION.—A sailor went to see a funeral: on his return from the churchyard, he said he had never seen a funeral ashore before. "Why, what d'ye thinks they does with their dead men?" said he to a shipmate. "I'll just tell ye: they puts 'em up in long black boxes and directs 'em."

PEARLS OF THOUGHT.

The true is the beautiful.

Truth is the soul of the poet's thought.

Truth is the reward of the philosopher's toil.

A glimpse of the real comes upon the human mind like the smile of daylight to the sorrowing captive of some dark prison.

The labours to try man's soul and exalt it, are the search for truth beneath the mysteries which surround creation, to gather ameranths, shining with the hues of heaven, from plains upon which hang, dark and heavy, the mists of earth.

The poet may pay the debt of nature; the philosopher may return to the bosom of our common mother; even their names fade in the passage of time, like planets blotted out of heaven; but the truths they have revealed to man, burn on for ever with unextinguishable brightness.

Truth cannot die; it passes from mind to mind, imparting light in its progress, and constantly renewing its own brightness during the diffusion.

The true is the beautiful; and the truths revealed to the mind render us capable of perceiving new beauties on the earth.

The gladness of truth is like the singing voice of a joyous child, and the most remote recesses echo with the cheerful sound.

To be for ever true, is the science of poetry,—the revelation of truth is the poetry of science.

Man, a creation endued with mighty faculties, but a mystery to himself, stands in the midst of a wonderful world, and an infinite variety of phenomena arise around him in strange forms and magical dispositions, like the phantasma of a restless night.

Lifting our searching gaze into the measureless space beyond our earth, we find planet bound to planet, and system chained to system, all impelled by a universal force to roll in regularity and order around a common centre.

The pendulations of the remotest star are communicated through the unseen bond; and our rocking world obeys the mysterious impulse throughout all those forces which regulate the inorganic combinations of this earth, and into which its organic creation is irresistibly compelled to bow.

The glorious sun by day, and the moon and stars in the silence and the mystery of night, are felt to influence all material nature, holding the great earth bound in a many-stranded cord which cannot be broken. The tidal flow of the vast ocean, with its variety of animal and vegetable life; the atmosphere, bright and light, obscured by the storm cloud, spanned by the rainbow, or rent with the explosions of electric fire, attest to the might of these elementary bonds.

The mind of man, in its progress towards its higher destiny, is tasked with the physical earth as a problem, which, within the limits of a life, it must struggle to solve. The intellectual spirit is capable of embracing all finite things. Man is gifted with powers for studying the entire circle of visible creation; and he is equal, under proper training, to the task of examining much of the secret machinery that stirs the whole.

In dim outshadowing, earth's first poets, from the loveliness of external nature, evoked beautiful spiritualisations. To them the sturdy forests teemed with aerial beings, the gushing springs rejoiced in fantastic sprites, the leaping cataracts gleamed with translucent shades, the cavernous hills were the abodes of genii, and the earth-girdling ocean was guarded by mysterious forms.

Such were the creations of the far-searching mind in its early consciousness of the existence of unseen powers. —*Robert Hunt's Poetry of Science.*

Beauty.—Remember, says Raleigh, that if thou marry for beauty thou bindest thyself all thy life for that which perchance will neither last nor please thee one year; and, when thou hast it, it will be to thee of no price at all.

IS THE SUN INHABITED?

The following are M. Arago's remarks upon this interesting problem:—"If this question were simply proposed to me, 'Is the sun inhabited?' I should reply, 'that I know nothing about the matter.' But let any one ask of me if the sun can be inhabited by beings organised in a manner analogous to those which people our globe, and I hesitate not to reply in the affirmative. The existence in the sun of a central obscure nucleus, enveloped in an opaque atmosphere far beyond which the luminous atmosphere exists, is by no means opposed in effect to such a conception. Herschel thought that the sun is inhabited. According to him, if the depth of the solar atmosphere in which the luminous chemical action operates should amount to a million of leagues, it is not necessary that the brightness at each point should surpass that of an ordinary aurora borealis. In any case the arguments upon which the great astronomer relies, in order to prove that the solar nucleus may not be very hot, notwithstanding the incandescence of the atmosphere, are neither the only nor the best that might be adduced. The direct observation, made by Father Secchi, of the depression of temperature which the points of the solar disc experience wherein the spots appear, is in this respect more important than any reasoning whatever."

A Blind Mason, Joiner, and Mechanician.—The *Journal de Chartres* gives an account of a water-mill near Chartres, built entirely by a blind man, without either assistance or advice from any one. The masonry, carpenter's work, roofing, stairs, paddle-wheels, cogs,—in a word, all the machinery pertaining to the mill has been made, put up, and set in motion by him alone. He has also, the above journal asserts, made his own furniture. When the mill does not work, the blind miller becomes a joiner, and also a turner, on a lathe of his own invention. In 1852, this blind genius was awarded a medal by the agricultural society of the arrondissement, for a machine serving the double purpose of winnowing corn and separating the best grains from the common sort.

CAUTION UPON THE USE OF THE ESSENTIAL OIL OF BITTER ALMONDS.

At a recent meeting of the Medical Society of London, Dr. Quain exhibited *a stomach after poisoning by bitter almonds*, removed from a man, thirty-seven years of age, who committed suicide by swallowing the essential oil of bitter almonds. He walked down stairs after taking the poison, and it was quite certain he lived for ten minutes. On opening the stomach, a most powerful odour was perceived, and a quantity of deep brown fluid was removed, from which ten drachms of the oil were obtained. The oil had a strength per drachm of 3·42 of anhydrous Prussic acid; besides much unavoidably lost in the process, no less than thirty-five grains of the latter were obtained in a pure form. The matter of interest was the length of time life continued after taking so large a dose, warranting a supposition that the acid is not so active when dissolved in oil as in water. The stomach, from which there was still a strong exhalation, was of a chocolate colour in all its parts. The œsophagus was unaffected.

Mr. Squire observed that essential oil of almonds is not so necessarily fatal as is generally supposed, or as Prussic acid. A woman who swallowed three drachms was taken into the St. Marylebone parochial infirmary, and recovered.

Dr. Quain said the bottle in this case labelled "Oil of Bitter Almonds" contained really the essential oil. There is a liquid sold which is a spirituous solution of the essential oil, containing only a small quantity of the essential oil, and answers all the purposes for confectionery. It is likely that was the preparation taken in the case just related.

Begin life by promising yourself all you can perform, and show your sincerity by performing all that you have promised.

THE MARINE AQUARIUM.

MR. GOSSE'S ACCOUNT OF HIS EXPERIMENTS.

Many persons who have seen the aquarium at the Zoological Gardens, Regent's Park, will be greatly interested in the following remarks. Moreover, thousands of persons are setting up, and will continue to set up, not only marine, but fresh water aquariums. And, therefore, everything which contributes to a proper knowledge of the management of them must be highly acceptable. Mr. Gosse says:—

If we attempt to collect and to keep marine animals alone in sea-water, however pure it may have been at first, it speedily becomes offensively fetid, the creatures look sickly, and rapidly die off, and we are glad to throw away the whole mass of corruption.

Why is this?—why should they die in our vessels when they live so healthily in the little pools and basins of the rock, that are no larger? For the very same reason that we should quickly die in a room perfectly air-tight. The blood of all animals requires to be perpetually renewed by the addition to it of the element called oxygen; and when it cannot obtain this it becomes unfit for the support of life. Terrestrial animals obtain this gaseous element from the air; aquatic animals (that is, those which are strictly such) obtain it from the water. But in either case it is principally produced by *living plants while under the action of light.* If, then, we can furnish our captives with a perpetual manufactory of oxygen, the main cause of their sudden death is removed. Of course they have other requirements, but this is the most urgent, the indispensable.

In a state of nature, the rocks, the crannies, the pools, the sea-bottom are studded with various living plants, which we call sea-weeds; and these, under the daily stimulus of sunlight, direct or indirect, produce and throw off a vast quantity of oxygen, which, by the action of the waves and currents, is diffused through all parts of the habitable sea, and maintains the health of its countless swarms of animals.

In an aquarium we seek to imitate this chemistry of nature. We collect the plants as well as the animals; and, a little observation teaching us how to proportion the one to the other, we succeed in maintaining, on a small scale, the balance of animal and vegetable life. Other less important benefits result from this arrangement; the creatures love retirement and shelter, and this they find in the umbrageous fronds; they delight to roam, and to play, and to rest in the feathery tufts, and not a few find their favourite food in the delicate leaves of the herbs.

On the other hand, the plant is indebted to the animal for some of its supplies. The carbon, with which its solid parts are built up, is derived from the carbonic acid which is thrown off by animals in the process of breathing; a poisonous gas which would soon vitiate the water, were it not taken up and appropriated by the plants.

Such, then, is the principle on which the aquarium is founded; and any conditions under which it can be carried out will serve, provided of course they be suitable in other respects to the habits of the animals and our purpose in keeping them. I have at present at my residence at Islington one marine tank full of animals and plants in the highest condition, the water in which, though as clear as crystal and quite colourless, has never been even removed from the vessel since it was first put in, 19 months ago. I have, also, other tanks and vases, which are respectively 17, 14, 13, and 4 months old. The successful establishment of these has not been achieved without some failures and losses, which yet must not be considered as unmitigated misfortunes, since they have added to my experience, and better fitted me to understand and sympathise with the difficulties of other beginners.—*Handbook to the Marine Aquarian.*

DISEASES OF THE TEETH.

At a recent meeting of the Western Medical Society of London, Mr. Thomas C. White read a paper on the cause of dental caries (carious teeth). After entering upon various physiological and pathological considerations, the author expressed his belief in the hereditary influence, and cited some curious instances. Certain trades tend to produce caries, of which grocers and lucifer-match makers were examples. Certain localities, especially damp ones, and those where imperfect drainage existed, appear to be amongst the causes; and also, mechanical violence.

Of the teeth most likely to be affected the first molars appeared to occupy the highest place, and those of the upper jaw usually were the first to decay. The "wisdom teeth" were often evolved in an unsound state. The popular idea of the contagion of caries was met by asserting, that the apparently successive decay of adjoining teeth was due to the pressure of the teeth against each other, caused by the upward and forward growth of them. For if such teeth were examined at an early period, long before caries had manifested itself, a round chalky spot might be noticed, caused by the crumbling of the enamel fibres beneath the firm, but steady, pressure exerted upon them: this opens the dentine to attacks of acid, and other irritants: and sphacelus is the result.

Having thus discussed many and various causes of dental caries, and contrasted the frequency of the disease in civilised society with the immunity enjoyed by man in his savage state, as well as that of the lower animals, the author was impelled to the conclusion, that "it may in great measure be attributed to the artificial mode of living in a civilised state, which brings on a morbid condition of the fluids, resulting in impaired nutrition.

The treatment must, of course, vary with the states and circumstances of the disease. In an incipient state, from pressure, the removal of the affected enamel, and polishing the surface was recommended. Where, on the contrary, the disease has proceeded so far as to excavate the substance, the sooner it is cleaned out, and the decayed part stopped with gold or amalgam, the better. When the caries has progressed to such an extent that the dentine is soft and yielding, the slightest pressure causing intense pain, stopping is inapplicable, and recourse must be had to escharotics. Of these, perhaps the most efficient was a combination of oxide of arsenic with acetate of morphia, mixed into a paste, with creosote. This gives slight pain for about two hours, after which it ceases, and the tooth can then be stopped and made serviceable for some time. The practice of indiscriminate extraction was declared to be unwarrantable.

SOAP—A GOSSIP OVER THE WASH-TUB.

Soap at the present day being very extensively adulterated, and the public generally being so little disposed to apply their reason to the subject, suggests to me, that in your first *Interview* with your readers you would allow me to communicate the following facts:—Soap, as you are aware, is a detergent article, applied to all cleansing purposes, consequently that soap must be most economical which contains and *retains* the greatest proportion of the detergent property. Soap is manufactured from oil or fat, either vegetable or animal. That soap is most durable and detergent, which is manufactured from animal fat. Palm oil and cocoa-nut oil are largely used in producing a soap which the public are always seeking, viz., a low priced one. Cocoa-nut oil soap is useful for marine purposes, being used in *cold* water; but if used in warm or hot water it wastes quickly, and although containing an excess of the detergent material, the nature of the grease does not allow the necessary rubbing on the articles to be cleansed, consequently the soap becomes wasted in the water, making strong suds, and thereby making the suds exceedingly caustic and injurious to the hands of those who wash. Palm oil soap is also subject to like wasteful consumption (but not to the extent of the cocoa-nut oil soap.) If employed in hot water, it being a vegetable grease it will allow only a moderate rubbing on the article to be

[illegible] Public Library

cleansed, giving a large quantity of lather. Persons generally suppose the lather gives the cleansing property, which is not the case. To cleanse thoroughly, the soap should be solid enough to resist the friction of rubbing, yielding the detergent property on the part to be cleansed. Soap manufactured from palm oil is very extensively adulterated. It will absorb when in a liquid state one-third of a chemical mixture commonly used in that class of soap, and yet have the appearance of ordinary soap. Aside from these soaps, I state, that taking the bulk of soap manufactured, two-thirds of which is adulterated, more or less, in neighbourhoods where the inhabitants are poor, which class of persons so commonly seek out low priced articles—take such districts as New Cut, Whitechapel, Whitecross-street, Bethnal-green, and neighbourhoods of the kind where the poor locate, the greatest quantities of the low-priced soap is sold, the shopkeeper, knowing how much this adulterated soap wastes even in keeping, buys only a few days' supply, and retails it out as fresh as possible on receiving it from the soap makers. In some of the lower priced palm soap one half is adulteration. So inferior is this article that the soap maker, who prepares it, is obliged to adopt a drying room, similar to drying of bricks made from clay: this soap is piled in a room heated with hot air (to dry, or, more correctly, *to bake* the surface) of each cake; this process of drying is intended to shut in the excess of moisture, and the portion of silica used in the adulteration gives a hard surface. Immediately when dried it is despatched to the shopkeeper, thence sold at the supposed cheap price, the poor being most generally the purchasers, being tempted by the colour and cheapness. The fanciful idea of having yellow soap a *pale* colour has given much opportunity to carry on this adulteration. Twenty-five years ago a sound genuine detergent soap was the article in common use: it was of a brown or yellow colour, properly called yellow soap. At the present day "Primrose," "Extra Pale," "XXX Pale," and terms of the like are given. The public study the pleasing of the eye first, and will not buy a brown or yellow soap, be it ever so genuine, in consequence of its colour. This class of soap is almost certain to contain the durable and cleansing quality (*if made by good makers*). Common soap is so inferior in its cleansing property that a large quantity of the crystal of soda is used, as the soap is found not to perform the detergent process.

To go back to the year, say 1830, crystal soda was scarcely in use for laundry purposes, but it will be found that so large is the use of this article at the present time that something like 20,000 tons reach the metropolis yearly. But such is the practice of adulteration, that this article, soda, is adulterated to the extent of one half in some localities; the component ingredients are seriously injurious; viz., sulphuric acid being one of the chief elements in the manufacture of this so-called soda: the consequence is, that whenever it is used, the fabric becomes injured and rotten from the effect of this acid, and the hands of washerwomen suffer.

I omitted to notice that common hot air dried palm soap is very extensively manufactured in our large towns.

The article called fancy soap must not be passed by, although generally bought by persons capable of judging in part; but when we find "honeysuckle soap," "turtle soap," with an endless variety of fine names, it is not out of place to ask what is it which gives these shades of colour. My answer is, the colourman furnishes the vermilion, the umber, the damp blue, and mineral colours of this poisonous nature. Fancy soap can be obtained of a much more pure and suitable character; but if the public will not accept truths, and prefer following after fanciful articles, they must bear with the inconvenience resulting from such indifference. To conclude, avoid low priced soap: the better sorts will be found most economical; the linen washed thereby will last longer. And remember that coloured soaps, though attractive to the eye, are generally injurious to the skin.

INFLUENCE OF THE MOON UPON HUMAN HEALTH.

Dr. Mead details a number of facts that have come under his own, as well as the observation of his contemporaries, demonstrative of lunar influence. Dr. Mead was physician to St. Thomas's Hospital during the time of Queen Anne's wars with France; and whilst occupying this honourable position great numbers of wounded sailors were brought into the hospital. He observed that the moon's influence was visible on most of the cases then under his care. He cites a case, communicated to him by Dr. Pitcairne, of a patient, thirty years of age, who was subject to epistaxis, whose affection returned every year in March and September—that is, of the new moon—near the vernal and autumnal equinoxes. Dr. Pitcairne's own case is referred to as a remarkable fact corroborative of lunar influence. In the month of February, 1687, whilst at a country seat near Edinburgh, he was seized, at nine in the morning, the very hour of the new moon, with a violent hæmorrhage from the nose, accompanied with severe syncope. On the following day, on his return to town, he found that the barometer was lower at that very hour than either he or his friend Dr. Gregory, who kept the journal of the weather, had ever observed it; and that another friend of his, Mr. Cockburn, professor of philosophy, had died suddenly, at the same hour, from hæmorrhage from the lungs; and also that six of his patients were seized, *at the same time, with various kinds of hæmorrhages*, all arising, it was supposed, from the effect of lunar influence on the condition of the barometer. Dr. Mead's opinions are formed upon some ingenious and probable hypotheses respecting the influence of the moon upon the atmosphere, and of the atmosphere upon human beings. Similar views were entertained by Dr. Francis Balfour, who had for many months the charge of a regiment of Sepoys, of Cooch Behar, immediately under the vast range of mountains which separate the northern part of Bengal from Bootan. The prevalent diseases were fevers, or "fluxes" attended with fevers. During the month four hundred men were invalided. The greater part, however, of these cases were convalescent in the course of eight days that intervened between the full and change of the moon; but during the remaining months of his stay in that district, the diseases previously mentioned increased to almost double their extent at every full and change of the moon, falling down again to their former standard during the eight days which intervened between these two periods. With regard to small-pox occurring in India, Dr. Balfour expresses himself as perfectly satisfied that the full and change of the moon interferred with the eruption, and increased the accompanying fever to a dangerous degree. The opinion of both these physicians have been decreed worthy of quotation by Dr. Forbes Winslow, in his papers upon medical jurisprudence.

How to Make Money.—Let the business of everybody else alone, and attend to your own: don't buy what you don't want, use every hour to advantage, and study to make even leisure hours useful: think twice before you throw away a shilling; remember you will have another to make for it: find recreation in looking after your business, and so your business will not be neglected in looking after recreation: buy low; sell fair, and take care of the profits: look over your books regularly, and if you find an error, trace it out: should a stroke of misfortune come upon you in trade, retrench, work harder; "but never fly the track:" confront difficulties with unflinching perseverance, and they will disappear at last; though you should even fail in the struggle you will be honoured; but shrink from the task, and you will be despised. By following these rules, however, you never need say "fail," pay debts promptly, and so exact your dues; keep your word.

SALUTARY SENTENCES.

To him nothing is possible who is always dreaming of his past possibilities.

By thy ability to lose must thy genius, by thy ability to gain must thy valour, be measured.

Francis Albertini, an Italian Jesuit, who died in 1619, published a Latin work, in which he maintains that the lower animals have, like men, their guardian angels. The tolerance of the English for blockheads and stupid corporations seems to confirm the opinion.

In the morning the sun strikes us as the giver of light; at noon, as the giver of heat; and in the evening as the giver of colour. Thus, happy the man on whom God first bestows wisdom, then moral strength, then an opulence of religious insight into the manifold beauties of the universe.

The Emperor Siegmund said that he who cannot leap over a thing must crawl under it. How well is a wise boldness taught in these words, and how much our English statesmen need the lesson! Under how many things they have to crawl for want of courage to spring over them!

God has given thee an abiding place, thou sayest, in the midst of pestilential swamps. If thou hast courage to banish, by persevering toil, the putrid waters, the swamps will change into fertile and beautiful fields, the deadly fever will depart, and thou wilt rejoice as a strong man in thy health. But, moreover, the curtain of vapour which was ever around thee will be rent asunder, and night after night thy eye will be gladdened and taught by the glory of the stars.

Fire is its own law as it is its own life. Send forth the fire in one swift devouring mass, and it will neither heed your counsel nor heed your guidance. But when the fire has burned itself out and has done its work, all the more quickly and effectually from being its own inspiring demon, its own resistless doom, how silly to sit down beside the black and blasted paths and say—Behold how strong a thing is fire, let us trust in it evermore, disdaining all slower agencies!

Aurelius Arpimont, in the *Critic*.

PROVERBS OF THE NEW ZEALANDERS.

A man who is of no consequence at home, is one of importance abroad.

It is not good to lean upon a man, for he is a moving bolster.

If it was a sun just appearing, well; but it is a sun which is setting.

THE MINIATURE.

John was holding in his hand
The likeness of his wife;
Fresh, as if touched by fairy wand,
With beauty, grace, and life.
He almost thought it spoke. He gazed
Upon the treasure still,
Absorbed, delighted, and amazed,
To view the artist's skill.

"This picture is yourself, dear Jane,
'Tis drawn to nature true;
I've kissed it o'er and o'er again,
It is so much like you!"
"And did it kiss you back, my dear?"
"Why, no, my love," said he;
"Then, John, my dear, 'tis very clear,
'Tis not at all like me!"

LINES

BY AUGUSTINE DUNGANNE, AMERICAN POET.

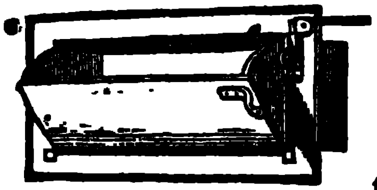
I sit beside my gentle one,
Her hand is laid in mine,
And thus we watch the parting sun
In golden haze decline.
Across the fields the shadows creep,
And up the misty hill;
And we our twilight vigils keep
At our own cottage sill.

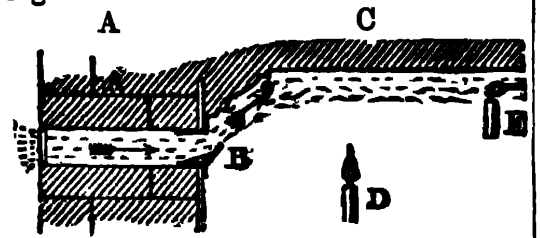
The distant brooklet's murmurs come
Like bell-notes through the leaves;
And many an insect's mazy hum
Its dreamy music weaves.
The dove's last notes, in rippling beats,
Upon the air departs:
The breath of all our garden sweets
Is creeping to our hearts.

The russet woodbine round our porch
In clustering ringlets twines;
The honeysuckle's crimson torch
Gleams through the dusty vines;
The sunset rays are trembling now
Amid the trellis-bars—
They paint upon my darling's brow
A glory like the stars.

Her cheek is nestling on my breast,
Her eyes are bright with tears,
A prayer, half-breathed and half-represt,
My listening spirit hears.
Oh! blessed be the changeless love
That glorifies my life!
All doubt, all fear, all guile above—
My own true-hearted wife!

1. SHERINGHAM'S VENTILATOR.—This is a very useful invention for the purpose of ventilating either public or private rooms. We have examined its construction, which is very simple; and the principle of the invention is perfectly sound. It is also exceedingly economical; and may be put up at a trifling expense. The cost of a ventilator varies from 6s. 6d. to 18s. 6d. The cheaper kinds are quite as efficacious as the high-priced ones. The ventilator is to be fixed in the wall, for which nothing more is required than the removal of a single brick. The valvular opening is placed upon the wall of the room (not the chimney), whilst, in the outer wall, an ornamental air plate is set to occupy the corresponding space caused by the removal of the brick. The effect of the ventilator will be found in the following illustration:—





A. Section of External Wall.—B. Section of Ventilator—C. Ceiling. D. Candles at 1 ft. from the Ventilator, and 8 inches from the Ceiling. E. Candle at 2 ft. from the Ventilator, and 2 inches from the Ceiling.

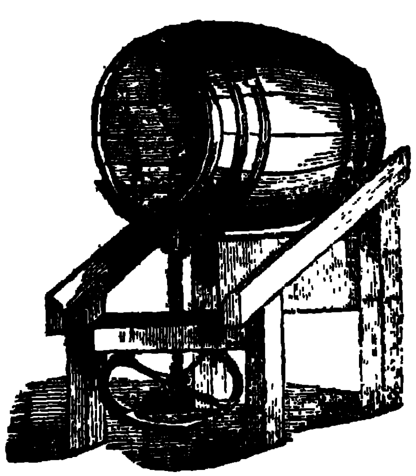
It should be placed in the wall which is at right angles to that in which the fire-place stands, but not opposite a door, for this reason, that the air coming in at the ventilator, being met by the air coming in from the door, is precipitated to the ground, thus causing a draught—but if the incoming current from the ventilator is allowed to pass freely, it glides along the ceiling. Unlike any other ventilator, its action is not impeded when the shutters are closed, at which time the rooms get the most heated from the fire of the day, and now the gas. The introduction of fresh air is more conducive to ventilation than providing means for the exit of the impure air—inasmuch as if you *admit* the fresh air, the *foul* air must be driven away. The supply of air through the ventilator is modified to any degree by a simple pulley. In a sanitary point of view, no living-room should be without one of these ventilators.

2. HULL'S PATENT NUT-CRACKERS.—This is an invention which strikes us at once by its usefulness and simplicity. The old nut-cracker, (whose nose will certainly be put out of joint by the new favourite,) consisted of a pair of handles working upon a hinge, the nut being received between flat toothed plates, and crushed. In the new Nutcracker, instead of the flat plates, there are oval hollows, with toothed border. The nut drops into the oval, and the shell is cracked *without injury to the kernel:* an improvement that cannot fail to be generally appreciated.

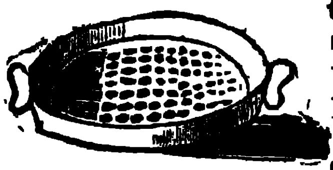
3. THE PATENT EGG BEATER is a little invention of great utility, enabling its possessor to beat or whisk any number of eggs most effectively in a few seconds. It consists of an earthenware mug, from the inside of which a number of points completely intersect the vessel. The eggs are dropped into the mug, a tight fitting cover is placed upon it, and it is then shaken for a few seconds, by which means the eggs are most perfectly beaten, and rendered fit for the most delicate operations of cookery. The only precaution that we see necessary in the use of the egg-beater is to rinse it out with hot water immediately after use, to prevent the remains of the eggs hardening upon the intersecting points. A most necessary precaution, if the vessel is to be kept always sweet.

4. WORTH'S PATENT KNIFE AND FORK CLEANERS are inventions of which we can speak highly. The knife cleaner consists of a board to which are fastened transverse cuttings of stout buff leather, so that the knife is brought in contact with a series of leather edgings, polishing, without scratching them. The fork cleaner is so constructed that it will clean the four prongs of a fork thoroughly, and at the same time. The prices of the knife cleaner vary from 6s. to 16s., of the fork cleaner, from 8s. 6d. to 10s. 6d. There are other articles of the same material.

5. **BARLOW'S CASK STAND** is a good invention for preventing the disturbance of fermented liquors by the tilting of casks. When a cask upon the old cask stand requires tilting, a block of wood, &c., is jerked under it; the consequence is, that the sediment is disturbed, a second fermentation often ensues, the fluid is never bright again, and eventually, two or three quarts at the least in every cask are wasted and thrown away. The frame of this new machine is on a sharp incline; its action is remarkably simple. By turning the wheel from left to right, the cask is raised, without trouble, beyond its level; so that any sediment or hops recede from the tap; and when the cask requires tilting, by moving the wheel from right to left, it is lowered so gradually, that sediment of the most limpid fluid by no possibility can get disturbed, and the last gill of ale, wine, &c., *may be drawn off perfectly bright.* They are made to suit every size cask. The cask stand, price 14s., suits the 9, 18, or 36 gallon cask; the large strong stand, at 24s., is for butts, pipes, or hogsheads.



6. **THE REGISTERED CINDER SIFTER** is a valuable contribution to household economy. The machine is shaped like a deep pail, with a rocking foot (like that of a cradle) at the bottom. The lid is taken off, the cinders and dust taken up with a shovel from under the grate, and then filled into the moveable sifter, which, when in its place, occupies about one-third of the height of the machine; the cover is then replaced, and the machine standing on the floor is rocked backwards and forwards, the dust in a few seconds separates from the cinders which remain in the moveable sieve, and are then ready for use; and the cover remaining closed for a few minutes, all dust is dissipated, and the dust in the lower part may be emptied into the dust-bin. Price 11s. 6d.



MOVEABLE SIFTER.

7. **BARLOW'S POTATO STEAMER.**—We very much approve of the principle of this invention for cooking potatoes by steam without soddening them with the moisture of condensed steam. In Fig. 1, the old-fashioned steamer, it will be seen, is a flat plate punched full of holes—the cover is a common saucepan cover—the potatoes are placed on the perforated plate; the steam as it arises from the lower vessel is condensed into drops of water inside the cover, and drips down like a shower

FIG. 1.

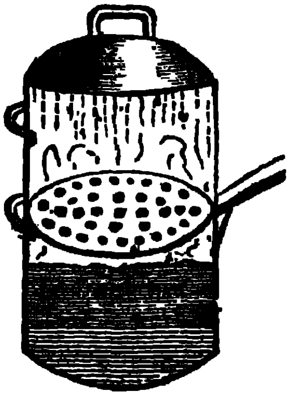
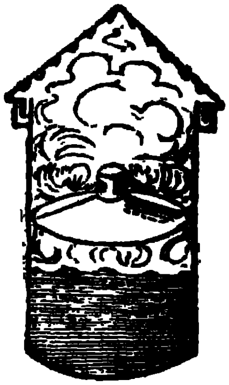


FIG. 2.



bath on the potatoes, completely soddening them with the condensed water, which then finds its way into the lower vessel, the water of which it contaminates with its disagreeable flavour, rendering it completely useless for the purposes of cooking a fowl, pudding, vegetables, &c.

In Fig. 2, showing a section of this invention, it will be seen that the potatoes are placed in the upper vessel, round the conical bottom; the steam enters from the top of the cone, and cooks the potatoes in perfection. The condensed water trickles down inside the flutes of the conical cover, and passes into the external receiver, thus avoiding its falling on the potatoes or into the lower vessel, by which means it is available for cooking anything else simultaneously, thus giving the space of an extra saucepan on the fire.

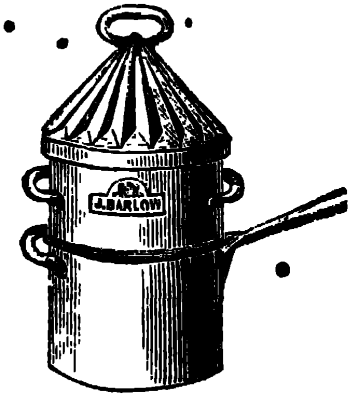
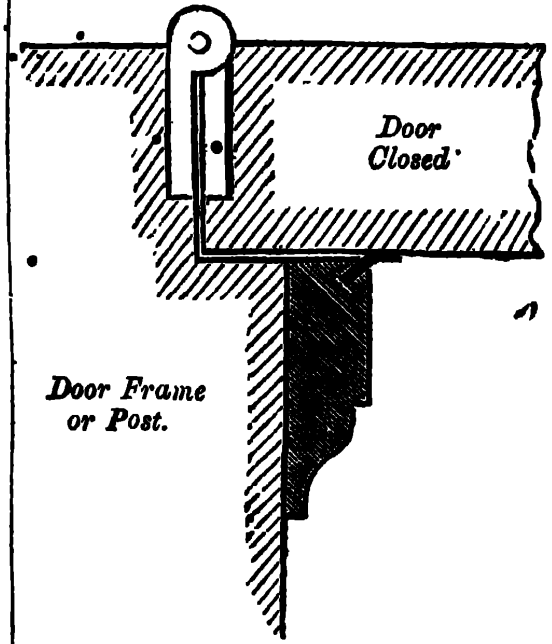


Fig. 3 is an external view of Barlow's Potato Steamer covered for use. There is one great advantage connected with this Steamer, which is, that when the potatoes are cooked enough, the skins crack, and *the potatoes almost peel themselves*; and thus by carefully taking off the skins, a perfect potato is sent up to table, which is so different to potatoes as they are generally served, they being not only indifferently cooked, but often so cut and mangled by the cook in peeling, as to convey the impression that they were diseased. In connexion with the thirteen ways of cooking potatoes given in *Enquire Within* (1042) these steamers will be found invaluable. The prices vary from 6s. to 11s.

8. GREENWOOD'S PATENT INDIA RUBBER STOPS.—This invention is an ingenious application of a thin band of Indian rubber to the exclusion of draughts and dirt from rooms, &c. The India rubber is fixed in a groove at a proper angle at the edge of the stop; an elastic spring is thus formed, which, when the door or window is closed, makes them perfectly air-tight, and prevents noise as the door closes dead against the India rubber. The wood beading, to which the India rubber is attached, may be had of any colour to match the frame or doorway. The prices are from 4d. to 6d. per foot.



An excellent means of rendering emigrants' boxes air and insect tight.

9. BOURRELET'S COMPRESSIBLES.—This is another invention, for the exclusion of dust and draughts from rooms, &c. It consists of the ordinary wool-wadding, manufactured into rolls, or soft cords, and stained of various colours, to match the woodwork. It is not, we think, so perfect an invention as the India rubber stops, but it is less expensive, costing only from 1d. to 4d. per yard. That it is very useful, and will greatly increase the comfort and cleanliness of sitting-rooms, there can be no doubt; and it has this advantage, that any one with a glue-pot can with the greatest ease, in a few minutes, fix it to every door, closet, and window in the house.

A YOUNG SAILOR'S FAREWELL.

Wait, ye winds, whilst I repeat
A parting signal to the fleet,
Whose station is at home:
Then waft a sea-boy's simple prayer,
And let it oft be whispered there,
Wherever he may roam.

Farewell to Father, reverend hulk,
In spite of metal, spite of bulk,
Must soon his cables slip;
But ere he's broken up I'll try
The flag of gratitude to fly,
In duty to the ship.

Farewell to Mother, first-rate she,
Who launched me on life's stormy sea,
And rigged me fore and aft;
May Providence her timbers spare,
And keep her hulk in good repair,
To tow the smaller craft.

Farewell to Sister, lovely yacht,
But whether she will sail or not
I really can't foresee;
May some kind ship a tender prove,
Well stored in wisdom and in love,
And take her under lee.

Farewell to George, the jolly boat,
And all the little craft afloat
On life's tempestuous sea;
When they arrive at sailing age
May wisdom prove their weather-gauge,
And guide them on their way.

Farewell to all in life's rough main,
Perhaps we ne'er may meet again,
Through stress of stormy weather;
But may we all be found above,
And anchored in the port of Love,
And all be moored together.

Wm. Hyk.

ON A WATCH.

Could but our tempers move like this machine,
Not urged by passion, nor delayed by spleen,
But, true to Nature's regulating power,
By virtuous acts distinguish every hour,
Then health and joy would follow, as they ought,
The law of motion and the law of thought;
Sweet health, to pass thy present moments o'er,
And everlasting joy when time shall be no more.

A. Hemsted.

BOYHOOD.

The dreams of early youth,
How beautiful are they—how full of joy:
When fancy looks the truth,
And life shows not a taint of sin's alloy:
When every heart appears
The temple of high thought and noble deed;
When our most bitter tears
Fall o'er some melancholy page we read.
The summer morn's fresh hours—
Her thousand woodland songs—her glorious hues
O! life's so full of flowers,
The difficulty, *then*, is where to choose!
The wonderful blue sky—
Its cloudy palaces—its gorgeous fanes;
The rainbow's tints which lie
Like distant golden seas near purple plains;—
These never shine again,
As once they shone upon our raptured gaze;
The clouds which may remain
Paint *other visions* than in those sweet days!
In hours thus pure—sublime—
Dreams we would make realities: life seems
So changed in after-time,
That we would wish realities were dreams!

ON A DEPARTED CHILD.

The Sun now gilds each verdant field,
Sweet fragrance fills the vale,
The butterfly is on the wing,
And zephyrs soft prevail;
The flowers arrayed in varied hues
Now blossom as before,
But death hath torn thee from my side,
To meet thee here no more.

The winding rill flows gently on,
And still adorns its side;
Forget-me-not, its simple bloom
Reflected in the tide.
The bird upon the slender bough
Is singing as of yore;
But thou art gone, thy happy face
I gaze upon no more.

When sadness makes the tear to flow,
Upward I cast a glance,
With thankful heart and moistened eye,
Gazing on Heaven's expanse.
Methinks again I see him smile
In all his pristine joy,
Assured that time will soon unite
The Mother to her Boy

CHARADE.

Ladies who wish the married state to gain,
May learn a lesson from this brief charade;
And proud are we to think our humble muse
May in such vital matters give them aid.

The Lady B—— (we must omit the name)
Was tall in stature, and advanced in years,
And leading long a solitary life
Oft grieved her, even to the fall of tears.

At length a neighbour, bachelor, and old,
But not too old to match the Lady B——,
Feeling his life monotonous and cold,
Proposed to her that they should wedded be.

Proposed, and was accepted—need we say?
Even the wedding-day and dress were named;
And gossips' tongues had conn'd the matter o'er—
Some praised the union, others strongly blamed.

The Lady B——, whose features were my *first*,
Was well endowed with beauties that are rare,
Well read, well spoken,—had indeed a mind
With which few of the sex called tender can compare.

But the old bachelor had all the ways
Of one grown fidgetty in solitude;
And he at once in matters not his own
Began unseemly and untimely to intrude.

Disliked this dress, that look or song—
Thought the piano wholly out of tune—
Frowned at the cat, hated the pretty poll,
And liked the windows closed in days of June.

And when the Lady B—— would calmly state
Wherein she deemed his views were in the wrong,
He took my *second*, slamm'd the door, and left,
And made his absence often very long.

And longer still these fits of sulking grew,
Till by the post one day a letter came,
Stating that marriage suited not his view,
And that he hoped the Lady B——, would feel the same!

Preposterous! she who for fifty years
Had sought a chance, and clutched at one at last,
To give it up! Oh, silly bachelor!
She has you now, and, faith, she'll hold you fast.

The Lady B—— at once became my *whole*,
And put the bachelor to most enormous trouble;
Far better had he yielded up himself,
For what he paid was worth more than his double.

My *whole* achieved a victory most complete,
And 'tis a motto with her to this day,
"If men make love to ladies, then retreat,
Let loose the lawyers, and enforce good pay.

CHARADE.

Oh thou, my *first*, from whom much good proceeds,
Grand in thy beauty, bounteous in thy breast,
Rich in thy treasures, rapid in thy speed,
Knowing no time of idleness or rest—
Whence comes the terror that destroys thy peace,
And makes thee tremble as with inward dread?
Whom hast thou wronged? What hast thou done,
That o'er thy face this awful curse should spread?
Lo! as I gaze, my *second*, like a spell,
Sweeps through my frame, and racks my heart with fear.
Where shall I fly for safety? where find peace
To offer up my voice in praise or prayer?
Oh ye who till the cultivated field,
Or dig the darkest mines for hidden gold,
Or cross the ocean heedless of the storm,
Or tend the sheep within their peaceful fold—
When that my *whole* appears, my *second* shakes
Your inmost souls—courage and pride must fail;
And ye, the proud men of the earth, must bend
Like simple reeds before the boisterous gale.

CHARADE—BLIND MAN'S BUFF.

'Twas Christmas time. and my nice *first*
(Well suited to the season)
Had been well served, and well enjoyed—
Of course I mean in reason.

And then a game of merry sort
My *second* made full many do;
One player, nimbler than the rest,
Caught sometimes one and sometimes two.

She was a merry laughing wench,
And to the sport gave life and soul;
Though maiden dames, and older folk,
Declared her manners were my *whole*.

ODD NOTIONS OF THE ANCIENTS ON GOOD AND BAD WEATHER.

From the earliest ages nothing in nature has been so great a mystery to philosophers and sages, as the why and wherefore of the meteorological changes perpetually taking place around them. That they exercised some special beneficence in the great scheme of creation was freely admitted by the teachers of the most antagonistic tenets of philosophy; but when they attempted to advance a theory, or explain any one of the most ordinary phenomena, their explanations, tested by the light of truth and modern discovery, appear so amusing, and often so ridiculous, that as a subject of interest to the general reader, we have appended under the above title, a few of the most universally accepted opinions of our ancestors on the marvels of rain, wind, thunder, and lightning.

Nothing puzzled these antique Solons more than the want of what they regarded as consistency in the operations of nature. If the Divine Artificer, they argued, did everything for the good of man, and the benefit, directly or indirectly, of those things which tended to his welfare, *why was it* that long seasons of drought, excessive heat, wet, or blighting winds, were permitted to follow on the steps of genial years; flooding or scorching up the land, blasting the hopes of the husbandman, and spreading famine and pestilence over the land? Though perfectly capable of reasoning fully, and understanding why the farmer every year gave a certain number of acres of his land a rest, and merely ploughing it in, left it in fallow, or unproductive, they were unable to apply this principle of *compensation* to the great scheme of nature, or believe that it was possible for the universal good, and the benefit of man, that there should be a "fallow," or compensation of the elements, to equalize the health of animal and vegetable creation; not in one locality, but wherever life existed on the surface of the globe. Nothing shows more clearly the ignorance of the ancients in respect to meteorological changes than the one fact that they regarded the north-east winds of spring as hurtful to man and fatal to vegetation; whereas now we know that by drying the land, and breaking the sods formed by the heavy rains of winter, they are almost the salvation of the country, in the opinion at least of the husbandman. So true is this, that there is an old Anglo-Saxon saying, still regarded with oracular veneration, and faithfully believed in by the farmer, "that a bushel of March dust is worth a king's ransom." There can be no doubt that weather-wisdom had a very humble origin, very long before the philosophers took it in hand, and included it in the science of aërial matters, to which they had, as usual, given a very hard name to pronounce,—meteorology. Weather-wisdom was first vouchsafed to the shepherd, whose sole business it is to observe whatever has reference to the flocks under his care, who spends all his days, and many of his nights, in the open air, and under the wide canopy of heaven. The shepherd is in a manner obliged to take particular notice of the changes of the weather; and when once he takes a pleasure in making such observations, it is amazing how great a progress he makes in them, and to how great a certainty he at last arrives, by mere dint of comparing signs and tokens. Everything in time becomes to him a sort of weather-gauge; the sun, the moon, the stars, the clouds, the winds, the mists, the trees, the flowers, the herbs, and almost every insect or animal with which he is acquainted, become to such an observer the instruments of real and useful knowledge. Of course there are certain very wise people who are apt to treat such prognostications with contempt. They can see no connection, for instance, between a cat's washing her face and the sky being overclouded, and therefore they boldly pronounce that the one has no relation with the other; yet the same people will readily own that the fluttering of the flame of a candle is a certain indication or forerunner of wind, which, however, is not discernible by their feeling, though they admit the fact because it lies within the compass of their understanding to discern that this fluctuation of the flame is caused by the wind acting on it, and therefore they are inclined to believe this, although it does not fall actually under the cognizance of their senses. But a man of larger compass of knowledge, who is acquainted with the nature and qualities of air; and knows what an effect any alteration in its weight, dryness, or humidity has upon all animal bodies, easily perceives the reason *why* the lower animals are sooner affected by any alteration in the air than man; and therefore to him the cawing of rooks, the chatter of swallows, and a cat's washing her face, are not superstitious signs, but natural tokens, like that of the candle's flickering, indicating a change of weather, and as such have been thought worthy of notice by such philosophers, poets, and learned men—as Aristotle, Virgil, Aratus, and Pliny. Thus science confirms the judgment of unsophisticated nature; and the celebrated "Rules to judge the Changes of Weather," by the Shepherds of Banbury, grounded on *forty years'* experience, will enable us (so we are assured) to know the weather to come, not merely for several days, but in some cases even for months beforehand.

When, however, we come to the explanation of natural causes, as handed down by the ancients, we are not a little amused by the odd notions with which *they* were apparently satisfied. We need hardly say they were sadly puzzled to account for those mysterious things, the WINDS, which not only blew where they listed, but acted extremely like "good angels" or "wicked devils," but always invisible. Pliny tells us that the south wind rises from the *bottom* of the sea, and the north-east from its *surface;* and that it is from this reason that those earthquakes are most dangerous that follow a south wind. This marine origin of the wind became a general favourite, and even down to a very recent date was the common theory in vogue.

With respect to LIGHTNING, the old notions were equally curious; the learned annotator of the "Shepherd of Banbury's Rules" thus explains the cause of the phenomenon:—The matter which produces the fire [lightning] is the *oil of plants,* attenuated by the heat of the day, and raised on high. Then whatever has exhaled from the earth that is sulphurous or oily, which is dispersed up and down the atmosphere, and is not continuous, is set on fire by turns, the flame dilating itself as far as the track of that exhalation reaches. Some other substance, pendent and floating in the air, meets with this also, with which it excites effervescence, takes fire, and flashes along with it.

"THUNDER is another bright flame rising on a sudden, moving with great velocity through the air, according to any determination, upwards from the earth, horizontally, obliquely, or in straight lines, or in several right lines joined at various angles, and commonly ending with a loud noise or rattling. It is observed that it thunders most when the wind blows from the *south,* and least when it blows from the *west.* The great principle of thunder is *sulphur,* as is evidenced by the smell it leaves behind it; but in order to obtain such an explosion there must be other ingredients mixed with it, especially *nitre,* of which the air is always full, besides other things of which it is impossible to give an account. The tracks of this sort of matter *fly about the air like lines or trains of gunpowder,* and as in the firing of that powder the fire begins at one end, and pursuing its aliment proceeds to the other extremity, and in this manner the whole mass of powder is fired, in this way we account for the phenomenon of thunder. Hence it is that we understand how it comes to thunder oftener in one place than in another; and most frequently in those localities where the soil produces *odoriferous* herbs, and abounds in sulphur; while in those places where such plants are few, and there is little sulphur, thunder is consequently very rare. Thus in Sicily and Italy it is frequent, and in Egypt seldom heard."

The component parts of our atmosphere are equally curious; the following is the opinion of our forefathers on the subject:—

"The air is composed of exhalations of all earthly bodies, as well solid as fluid; as also of fire, whether of the sun or stars, or of earthly bodies burnt; or of fire breaking out from the entrails of the earth, and ascending to be compounded with the other ingredients. This air, so composed, hath swimming in it a multitude of other things, and yet we find it to be not only perfectly wholesome, but the spring of motion and of life to men and all other animals."

Compare this cumbrous theory with the beautiful simplicity of scientific truth; and against the exhalations from the surface of the earth, and the stray atoms of fire from sun, stars, and the bowels of the earth, all mechanically blended, place the simple fact of two invisible gases, oxygen and nitrogen, with an atom of carbonic acid blended, to form that ether which is at once our life, and the means by which we are enabled to keep our position on the face of the globe.

According to the Japanese, "if an earthquake happens at noon, it produces epidemic diseases; at two or six o'clock in the morning it is the sure forerunner of a tempest; while in the evening it indicates fine weather. The credulous peasantry of Japan believe that all earthquakes and subterranean convulsions are caused by a monstrous whale striking the coast with its tail. Educated Japanese, however, consider these phenomena to be caused by a conflict between the ethereal and terrestrial elements, and regard the principal volcanoes and hot springs of the empire as the ten hells of Japan."

There is scarcely a subject on which mankind display more short-sightedness and inconsistency than they do upon the weather. When exceedingly fine and pleasant weather cheers us, and makes all around seem doubly beautiful, we are sure to exclaim that we wish such weather would last for ever. In this irrational exclamation we consult merely the gratification of our feelings, and leave our interest entirely out of the question. It would undoubtedly be very delightful to bask in perpetual sunshine, and be fanned by balmy zephyrs, but though agreeable to our feelings, would it be equally serviceable in maturing those various productions of nature which, for their development, need variety of season, sun, shade, and moisture; and from which we derive nourishment while in health, and alleviation and cure when we are diseased? — *Manual of Weathercasts.*

THE IMPORTANCE OF ERADICATING WEEDS.

The following experiments by Sir John Sinclair show the importance of weeding: — 1st. Seven acres of light gravelly land were fallowed and sown broadcast; one acre was measured off, and not a weed was pulled out of it; the other six were carefully weeded. The unweeded acre produced 18 bushels, the six weeded acres, 135 bushels, or 22½ per acre, which is 4½ bushels, or one quarter more produce in favour of weeding. 2nd. A six-acre field was sown with barley in fine-tilled and well-manured. The weeding, owing to a great abundance of charlock, cost 12s. per acre. The produce of an unweeded acre was only 13 bushels; of the weeded, 28: difference in favour of weeding, 15 bushels per acre; besides the land being so much cleaner for succeeding crops. 3rd. Six acres sown with oats, one acre ploughed but once, and unmanured, produced but 17 bushels; another six acres, ploughed three times, manured, and weeded, produced 37 bushels. *Ten* bushels of the increased produce may be fairly attributed to the *weeding*, and the other *ten* to the *manure.*

To prevent the dropping off of Grapes.—Make a circular incision in the wood, cutting away a ring of bark about a twelfth of an inch in breadth. The wood acquires greater size about the incision, and the operation accelerates the maturity of the wood, and that of the fruit likewise. The incision should not be made too deep, nor further back than the bark, or it will spoil both the wood and the fruit.

BALL-TAPS FOR WATER CISTERNS.—The copper and brass balls attached to the taps of water cisterns being considered injurious in their effects upon the water, it is desirable to find a suitable substitute. Gutta percha globes, which may easily be made, if they are not already obtainable, will answer the purpose. And if earthenware cocks were used instead of the metal ones now employed, the improvement would be still greater.

HOW TO TEST A MEERSCHAUM PIPE.—Draw a silver coin across it; if pure, there will be no line; if spurious, the gypsum necessarily used will take a mark from the silver like a pencil on paper. Imitation pipes are imported and sold as new Meerschaum.

CARROT PLUM PUDDING.—The mother of a family having tried the following receipt, and finding it answer very well, thinks as eggs are at present so very dear, and plum puddings in great requisition, that the Editor of the *Interview* would *honour* her by inserting it in his valuable publication:—

Christmas Plum Pudding with Carrots instead of Eggs.—One very large carrot boiled soft, and beaten into a pulp, six ounces of suet chopped fine, five table-spoonsful of flour, two ditto of sugar, one quarter of a pound of currants, one quarter of a pound of raisins when stoned; to be boiled four hours.

WILLS.—We are favoured by an eminent legal functionary with the following:—I hold that whenever two persons save money by their joint industry, the survivor is equitably entitled to the benefit of survivorship; and that any man who does not take the proper step for securing this benefit to his wife, in the event of her being the longest liver, is guilty of a fraud upon his nearest relative and best friend. And the fact of there being children makes no difference—the woman being as competent and as likely to provide properly for them in case she outlives her husband as the man, if the responsibility should fall upon him. Every married man ought therefore to make a will; and I do not know a better form than the following, which is in effect the same as I adopted on the day after I was married—above thirty years ago. It is not necessary to be prepared by an attorney, but may be copied by the party himself upon a sheet of foolscap or letter paper, care being taken to write the names and dates correctly, and to sign the name at the foot, in the presence of two witnesses, who in the testator's presence must sign at the places indicated.

The Will of J.—— B.——, of S——, in the County of Y——, [grocer]. I give all my real and personal estate and effects whatsoever and wheresoever, to my dear wife M—— B——, her heirs, executors, administrators, and assignees, absolutely. Dated this —— day of ——, 185—.

Signed and acknowledged by the testator, in the presence of us, who in his presence, and the presence of each other, subscribe as Witnesses, } J— B—

C—— D——.
E—— F——

ERRORS IN SPEAKING.—Instead of "you shall give me a separate maintainance," say "you shall give me a separate maintenance,"

Instead of "an effluvia," say "an effluvium."

Instead of "an automata," say "an automaton."

Instead of "a phenomena," say "a phenomenon."

Instead of "a memoranda," say "a memorandum." (*See Enquire Within*, 146.)

BIRD'S NEST PUDDING.—Take four or five good sized apples—pare and scoop out the cores of each, without making a hole through. Fill up the cavities with sugar. Place the apples in a small baking dish, into which there have been previously put two table spoonsful of sago mixed with a pint of water sweetened, and flavoured with a little nutmeg, or essence of lemon. Bake until the apples are done. For a large pudding the materials must be proportionably increased. This excellent receipt is said to be by a Quaker lady of America, and is given in Mrs. Horsell's Penny Vegetarian Cookery Book, in which is much valuable information. The pudding is economical and delicious, and is a great favourite wherever it is once tried. There are indeed families upon whose table it appears at least weekly, the year round.

OMELETTE WITH ONIONS.—This omelette is a great favourite in France, where the prejudice against the most nutritious and wholesome of all vegetables—the onion tribe—a prejudice so destructive to the sipidity of many English dishes—is utterly unknown. Those who do like onions, and have the courage to confess it, will find the *omelette aux ognons* a valuable addition to their culinary repertory. Its preparation is very simple. To an omelette of three eggs add half a good sized onion mixed almost to a powder, and a table spoonful of chopped parsley. The shredding of the onion to a sufficient degree of fineness is the most important thing, as from the short time required to cook an omelette it would otherwise remain untouched by the fire. And the lumps of the precious vegetable in its raw state are not recommended even to its most enthusiastic admirers. The onion may be boiled (or partially so) previously for fastidious tastes. But the omelette will thereby lose in flavour and crispness. —B.

FOR A CUT, BRUISE, OR ABRASION OF THE SKIN.—Take tincture of arnica, or wolf's bane, dilute with 20 parts of water, or 30 parts where skin is broken; apply the liquid with linen rag wrapped round cut, &c. If this should be too strong, dilute it with more water.

OPAQUE WINDOWS.—Allow me to give you a very simple mode of obscuring the glass of windows, and accidentally found out by me. In operating in photography I was annoyed by opposite neighbours staring at me; yet desirous of losing no light, I found the following mode effectual:—Cover the glass very equally with one or two coats of paste; when dry take a small rag of cotton cloth, dipped in a varnish made of Canada balsam and turpentine, and go over the paste; it will become clear, and yet no person can see through; besides, this method preserves the paste from decomposition.—H. H.

JOINING IVORY AND WOOD, &c.—I send you the following, with which I became acquainted accidentally, and which is, I believe, a profound secret except to the trade. It is a well-known fact to persons having pianofortes and articles inlaid with ivory, &c., that when subject to variations of temperature, much inconvenience and annoyance are experienced (especially in pianos) by the ivory keys and pieces inlaid coming off, defying the ordinary carpenter's glue to fix them on again. The following is the composition which should be used to obviate the evil:—Fine Russian isinglass is dissolved in strong acetic acid (*pyroligneous acid*), until the consistence of a strong firm glue is obtained, which is used in the usual manner.

THE USES OF THE BEECH TREE.—In *Enquire Within* (306) we have pointed out the usefulness of the leaves of the beech tree in forming beds for the poor. The nuts of the beech yield plentifully an oil which is of great value in burning, and for various manufacturing purposes; while the nut-cake from which the oil is pressed, is excellent for feeding pigs and poultry, and the oil also possesses some medical properties, similar to those of the oil of almonds, but its medical quality requires a closer examination than has yet been bestowed upon it. If any enterprising persons were to take the subject up, there is a clear road to a great success. There are, even within fifty miles of London hundreds of thousands of acres of full grown beeches, and it is estimated that one beech will bear as much as fifty bushels of beech-nuts!

CHEAP HOT-BEDS.—In many situations by far the cheapest and not an inconvenient hot-bed or plant-preserving frame may be made by building the sides with sods six or eight inches wide, driving small stakes through to stiffen them. These sod walls may be either built solid or with holes left, *à la* Macphail, for leaf or other lining to be added, when desirable.

Upon the top of these walls lay a frame of wood (we use only the larch slabs) halved into each other, and with screeds nailed on their sides to form the top frame slide, to receive and keep in their places either grass or other coverings. Simple as this may be, for a few pence you have a mushroom, plant, or cucumber receptacle far more capable of keeping out frost, than wood, brick, or stone. This useful suggestion is from an old correspondent of *The Gardeners' Chronicle* to the editor of that paper; and the editor gives his opinion that the plan is excellent.

SAFE ADMINISTRATION OF CHLOROFORM.—It is the opinion of medical men generally that in most cases in which deaths have resulted after the use of chloroform, it has been administered in too strong a dose. There are differences of opinion as to the precise operation of chloroform upon the human system in cases wherein death occurs. But it is generally agreed that chief attention should be paid to the breathing of the patient, and that the medical practitioner should not rely wholly upon the indications of the pulse.

SALT AS A MANURE.—Mr. Prideaux, of Plymouth, says that the properties of salt chiefly useful in agriculture are—1. The supply of its constituents, soda and chlorine. 2. Attraction for moisture and resistance of freezing. 3. Sharpness, without being acid or alkaline; solubility and penetration of porous matter. 4. Promotion of putrefaction when used sparingly, though the contrary when used freely. 5. Mutual decomposition with lime and some of its compounds, as well as some other salts, giving rise to other and often more active fertilisers. And he sums up the benefits resulting to the farmer from the use of salt as follows:—1. In the soil—retention of moisture and softness; general penetration and digestion of all the materials of vegetable food to enrich the root-sap; and destruction of vermin and of seeds when used freely. 2. On other manures—the destruction of all vermin, weeds, roots, and seeds; the digestive action just described; mutual decomposition with lime and its compounds, to the advantage of both; and an improvement in the efficacy of ammoniacal manures, whilst it greatly reduces their cost. 3. In the plant—improvement in the taste, wholesomeness, and nutritive power, and earlier maturity.

TO PREVENT THE EVIL EFFECTS OF LEAD CISTERNS.—To every 100 square feet of lead surface let there be firmly attached one square foot of sheet zinc, cut up into about sixteen or twenty pieces, and disposed equally over the "flat," or superficies of the cistern, gutter, &c.; or let the lead be studded with broad-headed zinc nails, say eight for a foot square. Where "pipes" have to be dealt with, zinc wire or thin strips of the metal should be inserted a little way, having a perfect contact with the lead at some part. The efficacy of this suggestion depends upon the fact, that zinc is always electro-positive to lead when these metals are brought together in the presence of moisture; consequently the lead could never be dissolved, its office being to conduct away the electricity developed by the slow action of water upon zinc. Both metals should be kept tolerably clean, by washing them three or four times a year with weak brine. To prevent the ill-effects of water impregnated with lead upon the animal economy, four or five drops of sulphuric acid in half a pint of pure water, may be taken now and then. White of egg (*not* boiled, but) mixed with warm water, is the best antidote in severe cases of lead poisoning.—W. L. S. (*in the Builder*).

ALLEGED ADULTERATION OF CIGARS. — It appears by the testimony of Dr. Hassall before the Parliamentary Committee that, contrary to general opinion, cigars and cheroots are but little subject to adulteration; the cheap penny cigars even consisting, in the majority of cases, entirely of tobacco; although, no doubt, of tobacco of very inferior quality. Cigars are, however, now and then met with, especially on racecourses, at fairs, &c., made up of hay and brown-paper. That, notwithstanding the generally received opinions, opium was not detected in any of the twelve samples of Manilla cheroots analysed. Fifty-eight samples of cigars were examined. (See the important article upon adulterations, *Enquire Within*, 2471.)

LAWS RELATING TO THE ADULTERATION AND SALE OF BREAD.—Bakers, or sellers of bread, are bound to have fixed, in some conspicuous part of their shop, a beam and scales, with proper weights for weighing bread; and a person purchasing bread may require it to be weighed in his presence. Bakers and others sending out bread in carts, are to supply them with beams, scales, &c., and to weigh the bread, if required, under a penalty of £5. Bakers, *either journeymen or masters*, using alum or any other unwholesome ingredients, and convicted on their own confession, or on the oath of one or more witnesses, to forfeit not exceeding £20, and not less than £5, if beyond the environs of London; and not exceeding £10 nor less than £5, if within London or its environs. Justices are allowed to publish the names of offenders. The adulteration of meal or flour is punishable by a like penalty. Loaves made of any other grain than wheat, without the city and its liberties, or beyond ten miles of the Royal Exchange, to be marked with a large Roman M, and every loaf so exposed. Any ingredient or mixture found within the house, mill, stall, shop, or other premises, of any miller, mealman, or baker, which, after due examination, shall be adjudged to have been placed there for adulteration, shall be forfeited, and the person within whose premises it is found punished; if within the city of London and its environs, by a penalty not exceeding £10, nor less than 40s., for the first, £5 for the second, and £10 for every subsequent offence. And if without London and its environs, the party in whose house or premises ingredients for adulteration shall be found, shall forfeit for every such offence not less than £5, and not more than £20. Is it not surprising that, with these laws in existence, and with the facts admitted that bread is generally adulterated with alum and other noxious substances, the magistrates do not punish the offenders?

MAKING TEA.—It has been long observed that the infusion of tea made in silver or polished metal teapots is stronger than that which is produced in black, or other kinds of earthenware. This is explained on the principle, that polished surfaces retain heat much better than dark, rough surfaces, and that, consequently, the caloric being confined in the former case, must act more powerfully than in the latter. It is further certain, that the silver or metal pot, when filled a second time, produces worse tea than the earthenware vessel; and that it is advisable to use the earthenware pot, unless a silver or metal one can be procured sufficiently large to contain at once all that may be required. These facts are readily explained by considering, that the action of the heat retained by the silver vessel so far exhausts the herb as to leave very little soluble substance for a second infusion; whereas the reduced temperature of the water in the earthern pot, by extracting only a small proportion at first, leaves some soluble matter for the action of a subsequent infusion. The reason for pouring boiling water into the teapot before the infusion of the tea is made, is, that the vessel being previously warm, may abstract less heat from the mixture, and thus admit a more powerful action. Neither is it difficult to explain the fact why the infusion of tea is stronger if only a small quantity of boiling water be first used, and more be added some time afterwards; for if we consider that only the water immediately in contact with the herb can act upon it, and that it cools very rapidly, especially in earthenware vessels, it is clear that the effect will be greater where the heat is kept up by additions of boiling water, than where the vessel is filled at once, and the fluid suffered gradually to cool. When the infusion has once been completed, it is found that any further addition of the herb only affords a very small increase in the strength, the water having cooled much below the boiling point, and consequently, acting very slightly.—*Dr. Kitchener.*

COLLEGE EXPENSES.—The curriculum of a Scotch University extends through four sessions, from the beginning of November till the end of April. The classes, generally taken the first session are the Junior Humanity, *i. e.* Latin, Greek, and Mathematical; attendance at these, five hours daily. The second session. Senior Humanity and Greek, Second Mathematical, and Logic classes; attendance four hours daily. In the third session, the Senior Humanity, and Greek, and third Mathematical, may be attended gratis, along with the Moral Philosophy class; attendance one hour in each class. In the fourth session, the class of Natural Philosophy is attended, along with the Descriptive Anatomy or Chemistry class, if the student wishes to take a degree. There is also a Professor of Natural History, whose lectures are gratis. The fees are three guineas a class for the session; but after having paid two sessions, the Humanity, Greek, and Mathematical classes are gratis. The class fees will therefore be nine guineas the first session, twelve the second, three the third, and three the fourth. There are no other payments whatever, unless a few shillings for a red gown, and two-and-sixpence to the janitor. The library, which, till lately, was entitled to a copy of every work entered in Stationer's Hall, is free to the students. The classes are all over by two o'clock, p.m., and any employment may be followed by the student: but if industrious, he will have little time for any employment but study during the first and second sessions. Most of the third and fourth years' students obtain employment in private tuition. Lodgings furnished, with attendance, cost for the session from £3 to £5; and a student may easily live on £10, if not inclined to be extravagant. So that with £25 in his pocket, he may easily get through the first session. In entering, students require to be able at least to read, parse, and construe Virgil, and the Gospel of St. John in Greek, and to be acquainted with the first two books of Euclid. There are a few bursaries of the value of £10 annually, to be competed for at the beginning of every session; and a good Latin scholar might have a chance of one of them. The expense will be rather more at Edinburgh and Glasgow universities, and less at Aberdeen, where there are almost as many bursaries as students.

PRONUNCIATION OF THE ASPIRATE.—The improper pronunciation of words commencing with *h*, and of words beginning with an unaspirated vowel, arises commonly from the manner in which the definite article is enunciated. As the prolonged sound of *e* before a vowel gives the consonate power of *y*, the habit of prolonging the sound of the *e* in *the* leads to the pronunciation of the words, "the horse," "the house," as if spelt "the yorse," "the youse." To correct this habit the pupil should not only learn how to aspirate his aitches in the words stand ing alone, but also with the article. Till the difficulty is thoroughly got over, *the* before a word beginning with the aspirate should be pronounced *thuh*, (the vowel sound being that which is heard in *bird, heard,* &c.) On the other hand, the improper aspiration of words arises often from pronouncing the article carelessly. While practising sentences in which *emphatic* words beginning with a vowel occur, this improper aspiration is especially to be guarded against. According to standard authorities, the *h* in the following words, and their derivatives, is silent:—*heir, herb, honest, honour, hospital, hostler, hour, humble, humour.* Mr. Dickens seems to think the *h* in *humble* should be sounded, and recent custom appears in favour of sounding the aspirate in *hospital. Hostler* is often spelled without the aitch, and *humour* is pronounced as if written *yewmour.* (See *Enquire Within,* 183).

SEALING-WAX VARNISH.—For fancy work, this has of late years been much used; and if well applied and the wax good, will be a very good imitation of Indian japan. The method of making the varnish or japan is very easy, being simply reducing the wax to a coarse powder, and pouring the best spirits of wine on it in a bottle, and letting it gradually dissolve without heat, shaking the bottle occasionally till it is all dissolved. A two-ounce stick of the best wax will be enough for a quarter of a pint of spirits. Recollect that much depends on the goodness of the sealing-wax, and that you may vary the colour of the varnish by using different coloured wax. As this varnish dries very quickly, it should not be made until it is wanted for use.

SHARPENING STEEL INSTRUMENTS.—A German scientific journal says:—It has long been known that the simplest method of sharpening a razor is to put it for half an hour in water to which has been added one-twentieth of its weight of muriatic or sulphuric acid; then lightly wipe it off, and after a few hours set it on a hone. The acid here supplies the place of a whetstone, by corroding the whole surface uniformly, so that nothing further but a smooth polish is necessary. The process never injures good blades, while badly hardened ones are frequently improved by it, although the cause of such improvement remains unexplained.

VELOCITY OF LIGHT.—Experiments to measure the velocity of light in its passage through a limited portion of the terrestrial atmosphere were made by M. Fizeau, and the results show a close approximation to those which have been obtained by observations on the satellites of Jupiter. His experiments were intended to discover the exact time required by a ray of light to pass from Suresnes to a certain spot on the heights of Montmartre, and back again to Suresnes. The distance between the two places is about two leagues, or 8,633 mètres, consequently the ray of light had to traverse 17,266 mètres. A point of intense brightness, produced by the oxyhydrogen light, was concentrated by a lens placed in the window of an apartment on a terrace at Suresnes, and being received upon a mirror at Montmartre, was reflected back again along the same line to Suresnes. Behind the point of light at Suresnes was placed a wheel, which carried 720 teeth, and which was so adjusted that the light shone through the opening between two of the teeth. An eye placed behind the wheel when it was at rest received the impression of a full ray of light. If the wheel was moved so that 12½ revolutions of the wheel passed before the eye in a second, the teeth of the wheel appeared continuous, the edge seemed semi-transparent, and a moiety of light was obstructed. The wheel having 720 teeth, each opening occupied 1-440th part of the circumference, and as the first interruption or eclipse of light was produced by the above rotation, it was proved that the light had traversed 17,266 mètres, while the wheel performed 1-144th part of a revolution. If the speed was increased uniformly, more light was obstructed at the numbers, 1, 3, 5, 7; and eventually a rapidity was obtained by which all the light was cut off, and that rate gave the value of the time necessary for a ray of light to pass from Suresnes to Montmartre and back again. Thus M. Fizeau determined that a ray of artificial light travelled at the rate of 70,000 leagues in a second of time. Astronomers have given the rate with which solar light travels at 192,500 miles in a second. This agrees very nearly with M. Fizeau's results; the differences between English and French measures being taken into account.

SOLITARY WASPS.—"Often I have seen," says M. Duméril, "such a wasp suddenly strike against the web of a spider in order to bring him out by the unexpected shock, when they seize him by the back, pierce him with their sting, snip him off his legs, which remain sticking to the web, and immediately carry him away through the air with a velocity perfectly astonishing. Such are the habits of these wasps."

ALCOHOL FROM FIELD BEET ROOT.—No doubt can exist of the profitable distillation of Alcohol from Beet. It is laid down by Dr. Ure, good authority, that 100 lbs. of field Beet or Mangel will yield 10 or 12 lbs. of proof spirit (let it be taken at the smaller quantity of 10 lbs.), and 10 lbs. of proof spirit is equal to about 6½ quarts (let it be taken at 6 quarts). Thus 2,000 lbs., or, still more, 2,240 lbs. (a ton), of Mangel, will yield 120 quarts or bottles of proof spirit. The produce of 1 acre will thus yield of proof spirit, if the crop be 30 tons, 3,600 quarts; if 25 tons, 3,000 quarts or bottles. Let the Excise duty be for the present placed out of view, and let the value of the spirit, free of duty or in bond, be adverted to, and the crop taken at 25 tons: 3,000 quarts at 6d. is £75; at 9d., £112 10s.; at 1s., £150. It has further been estimated by the Right Hon. T. F. Kennedy, that the relative value of barley and beet is as £42 to £150 in favour of the latter. These facts are highly important to the interests of farmers, and should be thoroughly investigated. No doubt, as we showed in our first *Interview*, with reference to the Beech-tree (p. 30), there are sources of undeveloped wealth in this kingdom, which might be turned to good account by enterprising persons.

SEWING COTTON.—Great impositions are practised by the manufacturers of sewing cotton, the length of cotton wound upon the reel being much less than that indicated by advertisement, and by the lable on the reel. Messrs. Jonas Brook and Brothers, sewing cotton manufacturers, expose this fraud in the following manner:—"It is a common practice for shippers to keep on hand a list of prices of threads of the following lengths—200, 180, 170, 160, 140, 120 yards; a purchaser selects his lengths, but with the knowledge that, although the reel or spool contains only 180 yards or less quantities, they are all to go abroad ticketed 200 yards, and they do go out so ticketed. Equal deception is practised in shorter lengths—the 100-yards reels or spools being similarly defective, and all having the same outward appearance. The fraud consists in the bole or barrel of the reel being thicker than it ought to be, so that, while the full quantity of thread appears to be sold, the fact is that a purchaser obtains so much more wood as he is short of being supplied with thread. We send you herewith a reel which we had offered to us as a sample for a large order; and you may judge for yourself how small a quantity it could hold; 25 yards would fill it, and yet it would seem to be a 200-yards' reel. We refused to degrade ourselves by taking the order. We also enclose you a proper 200-yards' reel, and you will see how the public are deceived and defrauded; the genuine article and the spurious one may easily pass for each other when wound upon; the only way to test them is to unroll and measure them, and the fraud is at once palpable."

FATHER'S USEFUL INVENTIONS.—We have received a parcel of preparations, described as "Father's Useful Inventions," consisting of a cement for decayed teeth, cement for broken china and glass, tooth powder, pomade, cloth renovators, rat and mice destroyer, bug destroyer, beetle destroyer, disinfectant, shaving cream, stain remover, and corn and bunion shields. We are asked to state our impartial opinion of them, and have accordingly examined each of the preparations, though we have not had time to test them all. Housekeepers will find a perfect boon in these cheap preparations, which are sold at 2d. per packet. The cement for broken china &c., is as good as can be made. The rat destroyer is evidently compounded in accordance with Dr. Ure's directions, given in *Enquire Within* (2220), and is the most efficacious preparation for the purpose. It will be better for housekeepers to buy these cheap packets, than to attempt to make the rat-destroying paste, as meddling with phosphorous is dangerous to unskilful hands. The pomade is excellent, and wonderfully cheap. The corn and bunion shields are also as good as can be produced. And of the other preparations, we are able to report that they are worthy the confidence of purchasers. The articles are rendered at a price cheaper than they could be made for private use.

WOOD AND IRON, PRESERVING.—Rey and Guibert's composition, recently invented, for preserving wood and iron, either in water or air, consists of ten parts of sulphuret of copper, two of sulphuret of antimony, and from five to thirty parts of the best drying varnish. These substances are ground together, forming a kind of paint, which is then applied to the wood or iron.

YEAST.—A writer in the *Times* having complained that he had tried the receipt for Yeast previously published in that paper, and in *Enquire Within* (934), and that the result had been a complete failure, the following letter appeared in *The Times* in reply:—

> "Sir,—In reply to the letter of 'H.' in *The Times*, dated January 17, I beg to say that I copied the following receipt from your paper in September or October last. I have used it ever since with invariable and complete success.
>
> "If the receipt is the same as that alluded to by 'H.,' there must have been some fault in preparing it, as I have never found it fail. I make bread three times a-week with it for my family.
>
> "The bread takes a considerably longer time to rise in the sponge, and also after being made into dough, than that made with ordinary yeast, and is better for being baked in a tin.
>
> "M. H."

The receipt as tried and again communicated to *The Times* by this correspondent, is precisely that given in *Enquire Within* (934). Here is another receipt for an excellent yeast, much used in Cornwall:—

Put one handful of hops to three quarts of water, and let it boil two hours; then strain the hops away, mixing a pint of flour with the liquor, and while hot a teacup-full of moist sugar; let it stand and get lukewarm, then work it with a teacup-full of yeast, stirring it often; let it stand one day, and then put it into jars for use. Quantity—one quart of the above to one bushel of flour.

With the view of placing the mode of making good yeast beyond all doubt, the following further instructions are given:—

The vessel it is made in should be a wide earthenware milk bowl capable of holding about six quarts, and the mixture is to be kept about new milk warm during the entire time of making—namely, from Monday morning till Thursday evening, and this is done by letting it stand at a proper distance from the kitchen fire.

I will suppose that he has done what is required on the Monday morning—that is, has boiled two ounces of the best hops in four quarts of water for half an hour and strained it, and, when new milk warm, has added a small handful of salt and half a pound of brown sugar, and that he has beat up a pound of the best flour with some of the liquor, and mixed all well together, and set the bowl, as directed, by the fire, covered over with a flat dish, where it stands till Wednesday morning, being occasionally stirred. Now, on Wednesday morning he adds three pounds of mashed potatoes, cooled down to the same temperature as the contents of the bowl. It is shortly after this addition that he may expect fermentation to commence, and as it proceeds the mixture must be frequently stirred. It very soon assumes the appearance of the finest brown-coloured brewer's yeast, rising to a crown. By the Thursday evening its powers will be completely established, and then he may bottle it, stirring it to keep it homogeneous.

The first time it was made in my house the bottles were corked too soon and too tight, consequently it burst two of them. I use Seltzers water bottles. Of course, when bottled, it must be put in a cool place to keep it quiet.

When newly made more is required to raise the bread than when it is six or eight weeks old. It always proved stronger for being kept.

The value of this yeast is that it is equal to any of the other yeasts, and can be made without their aid.—D. S. Y.

We have now, we think, in the work alluded to, *Enquire Within*, given all the information that can be rendered on this subject.

LIQUID GLUE (permanent).—Two methods of making liquid glue are given in *Enquire Within* (2244), and here is a third:—"Melt three pounds of glue in a quart of water, and then drop in gradually a small quantity of nitric acid. When this ingredient is added, the mixture is to be removed from the fire and allowed to cool. Glue so prepared has been kept in an open bottle for two years, still ready for use on the instant. A good fluid glue, ready at all times for use without any preliminary preparation, is one of the most useful articles with which the housekeeper can be furnished." Breakages should be repaired immediately, or they get worse, and the pieces are lost. In making the above preparation, what is termed "Salisbury Glue" should be employed. It is sold at the ironmongers', at 1s. per pound.

TO RENDER FEATHERS FIT FOR USE FOR BEDS, PILLOWS, &c.—The feathers from land birds, such as turkeys, fowls, &c., should be kept by themselves, and those from water birds, as geese, ducks, &c., may be put together also. These latter are much the best, having the most down, and being softer and more elastic, and it is consequently advisable to use these for pillows; both kinds, from land and water birds, should go through the same process in preparation for use. As soon as convenient, after they are plucked from the birds, they should be put in strong paper bags, and these placed in the oven as soon as the bread comes out, and remaining there till the next day, they will be sufficiently dry to prevent the animal juices decomposing and causing a most disagreeable smell. After this they should be "picked," all passing through women's hands for this purpose, who should strip the feathery part from the quill of all those whose points are sufficiently strong for pressure to cause their piercing the bed-case, and this will be found to be troublesome, even though the closest material may be used, if the feathers are not well "picked." It is not recommended to use a large proportion of the wing or tail feathers, as they are not so elastic, but some of the softest may be cut off the quills with a pair of scissors; the smaller ones may be more quickly stripped with the fingers after "picking." They should be again put into the oven for twelve hours to render them quite sweet and safe from moth, whose eggs might possibly have been deposited among them. They are then fit for filling beds, pillows, cushions, &c. The land and water-birds' feathers may be mixed, which makes rather better stuffing than the former alone, though this is very good for beds if properly prepared. The price as piece-work is from 4d. to 6d. per lb., the feathers being weighed after being brought home picked and ready for use.—The above, from the *Gardener's Chronicle*, appears to be a simple and more expeditious method than that given in *Enquire Within* (450). The method of cleaning ostrich feathers, *Enquire Within* (2450), is simple and efficacious, and the instructions for dyeing feathers black, blue, crimson, green, lilac, pink, rose colour, red, yellow, &c., are excellent. The instructions for making feather flowers, *Enquire Within* (2258), are perfect.

LIME FOR COTTAGE WALLS.—Take a stone or two of unslaked white lime, and dissolve it in a pail of cold water. This, of course, is whitewash. The more lime used, the thicker it will be; but the consistence of cream is generally advisable. In another vessel dissolve some green vitriol in hot water. Add it, when dissolved, to the whitewash, and a buff is produced. The more vitriol used, the darker it will be. Stir it well up, and use it in the same way as whitewash, having first carefully got off all the old dirt from the walls. Two or three coats are usually given. For a border at top and base, use more vitriol, to make it darker than the walls. If you have stencil-plates, you can use it with them. This is cheap, does not rub off like ochre, and is pure and wholesome, besides being disinfecting.

IN prosperity be prepared for a change: in adversity hope for one.

TELEGRAPHY AND THE ATLANTIC TELEGRAPH.

The importance attached to free telegraphic communication with America has become so universal as to form one of the most engrossing subjects of popular attention. And from the political and commercial importance of the enterprise, both to the people of Great Britain and the United States, the attempt made to master the great desideratum of bridging the Atlantic, has acquired an historical value that few subjects even of modern invention can surpass. On this account we propose laying before the readers of the "Interview" a brief account of the various attempts made to realize an undertaking which, after so many failures, has been at last—it is fondly hoped—crowned with complete and lasting success.

Origin of the Atlantic Telegraph.

The idea of establishing telegraphic communication between England and America was first discussed by a small party of gentlemen called together for the purpose by the special invitation of Mr. Cyrus W. Field, in New York, in the early part of 1854. The names of the pioneers of the Atlantic Telegraph besides Mr. Field, were Messrs. David D. Field, Peter Cooper Moses, Taylor Marshall, O. Roberts, and Chandler Whyte. The result of their discussions—continued through several evenings—was a written agreement that the enterprise should be at once undertaken. In March of the same year, an Act of Incorporation was obtained from the Legislature of Newfoundland, under the title of the "New York, Newfoundland, and London Telegraph Company," granting the exclusive right, for fifty years, to land cables on the shores of Newfoundland, and any places adjacent under their jurisdiction. Having, in 1856, completed a cable across the Gulf of St. Lawrence, Mr. Cyrus Field then procured from the United States Government, permission for the steamer "Arctic" to sound the Atlantic from Newfoundland to Ireland; while a similar assistance was obtained from the British Admiralty, who ordered careful soundings to be made from Ireland to Newfoundland. About the same time a company was formed in England, having the same object in view, and entitled the "Atlantic Telegraph Company." Eventually these two companies, the American and the English, agreed to operate in connection and amalgamate. The shares of the latter company, amounting to £350,000, were subscribed for mostly in England, the chief exception being Mr. Field, who himself subscribed £88,000 of the capital.

Attempts to Lay the Atlantic Cable.

On the 7th day of August, 1857, about three years and a half after the preliminary meeting at New York, the first attempt to lay the Atlantic Cable was made; the paying-out beginning at Valentia. On the fourth day out, however, an accident occurred, the cable suddenly parted, the end escaping into deep water. Upon this disaster, the "Niagara" put back to England with her consorts, and the speculation for the time was abandoned. The failure of this expedition being attributed entirely to defects in the paying-out machinery, every exertion was made, by new and more perfect appliances, to prevent a recurrence of the same misfortune, and in less than ten months everything was said to be again in working order.

Accordingly, on the 10th of June, 1858, the telegraphic squadron departed from Plymouth Sound on its second expedition, and in a few days reached the original starting-ground on the coast of Ireland, and immediately commenced operations. All went well for some days, when, from some unexplained cause, the cable parted; but, being fortunately recovered, a new splice was effected, and the fleet proceeded on its way; all going well till two hundred and ninety miles of the cable had been paid out, when suddenly, and without any notice, the line again parted, and the ships were compelled to return to Queenstown, again foiled in the attempt to bridge the Atlantic.

Not to be deterred by failures in an

object of such vast importance, the friends of the cause exerted themselves to the uttermost to master every difficulty, and a new cable being in readiness, another expedition was immediately organized; and one, too, on a much more hopeful basis, viz., to start from the *middle* of the Atlantic, by means of two ships and two cables joined in mid-channel, the ships to steam in an opposite direction, and reaching their destinations at the same time, land their shore ends of the cable respectively at Valentia and Trinity Bay, and thus complete, almost at the same hour, the continuity of the line. To carry out this object, the United States again placed the "Niagara" at the service of the Company to carry the American or Newfoundland half of the cable; while the British Admiralty commissioned the "Agamemnon" to bear the Irish or European half.

On the 17th of July in the same year, these two splendid war-steamers, freighted with the most civilizing of all modern discoveries, and surrounded by their courier ships and tenders, again put to sea to make the third effort to achieve the important enterprise. Steaming to mid-ocean, the splice was made between the two ends on board of the Agamemnon, and being dropped into the water, the signal of departure was given, and the two huge ships, with their respective consorts, and with their heads due east and west, slowly proceeded to their destinations, paying out the cable with remarkable regularity and satisfaction; and on the 5th of August, in less than three weeks from the fleets sailing from England, each ship landed its respective end at Valentia and Trinity Bay.

Thus, at last, the great problem was solved, and the laying of the Atlantic Cable accomplished. A number of messages were immediately flashed along the submerged wire from continent to continent; the first, however, and the most important was the memorable communication from her Majesty Queen Victoria to the President of the United States, and Mr. Buchanan's congratulatory reply to the Queen. The satisfaction in the minds of all commercial men and the public generally in this country, on the successful issue of the enterprise, was everywhere enthusiastically expressed; while in America, and particularly in New York, public delight at the achievement was displayed in the liveliest demonstrations of joy.

Though success had thus far crowned the long and unwearied exertions of the promoters of this extraordinary enterprise, it was evident—almost from the first line transmitted—that there was something wrong or radically weak in the electric power of the submerged cable; causing, after the first few days, constant interruptions, which no telegraphic skill and no electrical apparatus could rectify; and on the 1st of September the cable suddenly ceased to respond. Its telegraphic life had virtually expired, no power of the electricians could resuscitate it for a moment; and after something less than a month of sickly existence, the *third* attempt to master the Atlantic telegraph terminated in the chagrin and disappointment, but not in the defeat, of its still hopeful promoters.

The practicability of establishing telegraphic communication between Europe and America had been fully proved by the successful submersion of the last cable—that of 1858—and the actual transmission of some *three hundred messages*. A committee—appointed by the Lords of the Privy Council to inquire into the construction of submarine cables—had, after a careful investigation, reported that the late failures were owing entirely to causes *which might have been guarded against*. Encouraged by this, and the opinion of gentlemen of high scientific attainments, the projectors resolved to persevere. The public, however, deterred by the many failures, held back from the speculation, and the want of capital for a time delayed the proceedings. The enterprise, however, received an immense impulse when the firm of Glass, Elliott, and Co., and the Gutta Percha Company, were incorporated into one firm of great wealth and importance, under the name of the "Telegraph Construction and Maintenance Company."

(*To be continued.*)

CHARADE.—THE SHIPWRECK.

The wind howled, and the heaving sea
Touched the clouds, then backward rolled:
And the ship she strove most wondrously,
With ten feet water in her hold.

The night it darkened, and my *first*
No sailor's eye could see,
And ere the day should dawn again,
Where might the sailor be?

Before the rising of the sun
The ship lay on the strand,
And silent was the minute gun
That signalled to the land.

The crew my *second* had secured,
And they all knelt down to pray,
And on their upturned faces fell
The early beam of day.

The howling of the wind had ceased,
And smooth the waters ran,
And beautiful appeared my *whole*
To cheer the heart of man.

ENIGMA.

Without me the world had never been
Other than forest wild, or ocean green.
I map the earth with lines all fair to see,
Remove the mountain, and transplant the tree.
Egypt's vast pyramids of me were born:
Without me Greece were of her temples shorn.
By me the palace rear'd which shelters kings;
By me the cot wherein the loving maiden sings.
By me the ship is steered across the sea,
By me the battle fought triumphantly.
By me the seed is sown, the harvest glean'd,
And stubborn soil from barrenness redeem'd.
With hands, without, my functions are fulfilled,
Wherever web is spun, or land is till'd
Bird and beast, fish, reptile, all devote
Themselves to me, in town or clime remote.
What am I, then? Surely, I'm known to you;
Your friend—oldest, and best, and ever true.

CHARADE.

My *first* she was a serving-maid—
She went to fetch some tea;
How much she brought my *second* tells,
As plainly as can be.

Now when you have the answer found,
Name it to others too;
My *whole* is just the very thing
In telling them, you'll do

CHARADE.

Feeling very ill one day
(What it was I cannot say),
But a pain like tic doloreux
Ran the nerves of my head through
Twinge and pang, pang and twinge.
Soon the door was on the hinge,
And the doctor coming in,
Felt my pulse, and pulled my chin,
That he might better see the tongue
Which only sad complainings sung.
Then he formed a sage conviction,
And wrote at once a good prescription.
Calling then my servant maid,
He in her hands the paper laid:
"My *first*, my *second*, instantly,
Or your master worse will be!"
But the minx she loitered long;
Pain increasing, spasms strong,
Down I fell and took a roll:
On what I fell reveals the *whole*.
Pity that the servant maid
On her errand thus delayed!

ENIGMA.

I've led the powerful to deeds of ill,
And to the good have given determined will.
In battle-fields my flag has been outspread,
Amid grave senators my followers tread
A thousand obstacles impede my upward way,
A thousand voices to my claims say, "Nay;"
For none by me have e'er been urged along,
But envy followed them and breathed a tale of wrong.
Yet struggling upward, striving still to be
Worshipp'd by millions—by the bound and free,
I've fought my way, and on the hills of Fame,
The trumpet's blast pronounced the loud acclaim;
When by the judgment of the world I've been
Hurl'd from the height my eyes have scarcely seen,
And I have found the garland o'er my head,
Too frail to live—my home was with the dead.

CHARADE.

When upon the gallows-tree
The culprit swings my *first*;
My *second* there will speedy be,
To one of men the worst.
Oh, that a man should risk his soul,
And against God should dare my *whole*.

Answers to Charades, page 25:—

1. Plain-tiff.
2 Earth-quake.
3 Flip-pant.

GARDENING FOR FEBRUARY.

STOVE AND GREENHOUSE.—Be attentive to remove dead leaves from the plants, to keep the earth in the pots in a loose state, and to admit fresh air when the weather permits. The potted plants that are still in a dormant state and have been kept dry during the winter, may towards the time of their removal be plunged to a considerable depth in water of about 60 degs., in order thoroughly to moisten the mould around them, as a preparation for regular watering. Syringing the leaves of other plants and sprinkling water on the alleys are found useful in producing atmospheric humidity in climates where the external air is very cold and dry—moisture with heat being, as already mentioned, the most favourable combinations for promoting vegetation.

The woody plants in the greenhouse that are in a state of torpor, except when the mould is in a state of dust and the leaves are withering, should not be yet encouraged to grow, by heat or watering. Pelargoniums however will be now exhibiting symptoms of life, and will require repotting with fresh mould, and in some cases to be transferred to larger pots. In doing this, shake the earth almost entirely from the roots, and remove the dead fibres from the roots with the finger, avoiding to use the knife unless it be to trim with a tender hand dead or decayed roots. Stake the stems and tie them to the sticks, which ought to be taller than the plants, with soft and flexible bands of rushes, strips of matting, or worsted, &c.

There is no part of the gardener's employment more delightful than that of anticipating the season of vegetation at this time, and enlivening the gloom of a dreary period by calling forth the freshness and bloom of the many flowers which will now begin to expand their corollas. Varieties of the Double Almond, with the Rhodora, and some other plants, appear now before their leaves push forth, and artificial warmth will bring forward many beautiful plants.

Roses and other hardy plants, brought into the stove-house for forwarding, are liable to the attacks of the green fly called the Aphis. If you are fond of a pipe or cigar, you may perhaps smoke this insect out; in this way tobacco-smoking may be turned to a useful purpose, which cannot be said of the practice in general. Scattering pungent snuff on the plants is another and perhaps more effectual remedy. A correspondent of the *Gardeners' Chronicle* mentions, that having casually put a titmouse into his greenhouse, he found that this little operative cleared all his plants of insects, which had crowded among his Cinerarias in particular, from which he had found it most difficult to dislodge them.

In the stove-house, the bottom heat of the tan-pits must be sustained by forking up the bark (this at the beginning of the month, and occasionally afterwards if necessary), to give it time to ferment: the progress of choice flowers and fruits cannot be expected if the heat of the tan be not sustained.

You will now be busy in forcing strawberries, French beans, peas, carrots, potatoes, radishes, asparagus, sea-kale, &c. If the peas and beans sown last month under frames should now touch the glass, you can check their tendency to spindle, by turning their tops towards the back part (the north side) of the frame; if they be constrained in that position for a few days, by means of a lath or any other contrivance, they will afterwards, of themselves, take that direction, and branch out as desired.

Line such hotbeds as have cooled down, and make new ones for melon and cucumber plants, from the seed-bed. Cold beds will answer very well when re-dressed for the radishes, which do not grow well in the heat that is necessary for cucumbers, or for the reception of cauliflower-seedlings and salading, picked out from their native bed.

Cover all your glass-houses, if possible, and frames, completely with matting and straw during severe frost, and if you have a quantity of dry leaves, you will find them most serviceable as an exterior lining to keep off frost: by placing short stakes round the linings of dung or clay-mortar, as the case may be, you can prevent them from being moved by wind: filling the alleys between the beds of Anemones, &c., will be serviceable, as security from frost, but will not supersede the necessity of laying mats over the beds, while the frost is prevailing.

If you have not sown cucumbers in a bed made last month, do not delay to do so now, or else procure plants from gardeners who have sown at an earlier period. The plants will be fit for putting into their bearing-beds when they have pushed two rough leaves, and began to exhibit the appearance of runners or shoots coming forth. Having made the new bed as before directed, cover it over to the depth of four inches with light rich mould, mixed with peat, raising a little mound under the centre of each light, and rather nearer the back than the front, and three or four bushels laid round the frame on the inside, all of which mould is to be stirred daily. Everything having been thus prepared, take four pots of the plants (those which appear to be the finest, of course), put the mould into a round heap under the middle of each light of the new bed; make a hole in the centre of the heap, suitable for your purpose; take the pots or plants, one at a time, put the fingers of one of your hands on the top of the earth of the pot, then turn the pot upside down, give the rim of it a little tap upon the edge of the frame, pushing the oyster shell with the forefinger of the right hand, and the plants and earth will come clean out of the pot in a connected ball; which with both hands you are to deposit in the hole which you have made in the heap, in the centre of the light. When you have thus deposited it, draw the earth of the heap well up about the ball, and press it a little with your fingers, taking care of two things—first, that the hole be sufficiently deep to admit the ball down into it, so low that the earth of the hill when drawn up about the plants may come up quite to the lower side of the stem of the seed-leaves; and secondly, taking care that the points of the leaves of the plants be not more than six inches distant from the glass. One plant is enough to establish under each light, for crowding always defeats the object by causing a growth of small plants which are rendered defective by the interference of the roots, and their perpetual struggles for advancement. Water these plants once or twice gently with rain or pond water, warmed either by having been left for twenty-four hours in the frame, or by the adoption of a sufficient quantity of boiling water; and also those that are in pots sunk in any part of the bed as a reserve for supplying any failures in the others. Next prepare a lining (which you will have to apply in about a fortnight) to the back, to the height of the frame, laying a board on it close against the frame to prevent the steam which will soon arise from entering the bed, and another lining (if necessary) in a fortnight after to the front, and afterwards (allowing the same interval of time to intervene) to the sides. On the authority of the *Gardeners' Chronicle*, however, there will be no danger from the rank steam, as long as the condensed water on the sashes is of pure colour. Keep up the linings as they sink by adding fresh materials to the top; litter, straw, or mats, will occasionally be required to guard against frost or east winds, especially at night, but fresh air must be admitted, more or less according to the state of the weather without, and the degree of heat within, by raising the frame either in front or behind (the direction of the wind being considered), for air as well as strong heat are indispensable to the health and fruitfulness of the cucumber, and light must never be intercepted. The runners are to be encouraged to cover the entire surface by *pinching* (for the finger and thumb should always be used for this operation in preference to the knife, which causes a wound), when they have got three joints from their tops, which makes them throw out side-shoots from each of those joints. When these new shoots or runners have four complete joints, pinch off the fifth as soon as it appears. By this treatment there will be a sufficient number of runners for each light. As the plants become vigorous they will require fresh mould, which is to be drawn from the sides of the frame to the mounds in the centre for the nourishment of the roots; and as their fibres will continually stretch out in search of food, you are to increase the circumference of those mounds continually, by removing the earth to them from the sides until the whole surface of the bed is on a level with the central parts. The blossoms must be impregnated, as will be noticed in the treatment of the melon.

Towards the end of the month make the first melon bed, as for cucumbers, except that the mould should be more tenacious, and the lights larger. One plant only should be put under each light, if the frame be of moderate size; but if two be planted, let them be fifteen inches apart lengthways with regard to the frame. If the Persian and Cabul kinds be chosen, the shoots will not require pinching like other varieties; the leading one is to be trained under the centre of the light, and the lateral ones on each side at right angles. Generally, melons raised from seed should be stopped when they put off the rough leaves, and only one shoot should be allowed to run from the axil of each of the two rough leaves left on the plant; those which proceed from the axils of the cotyledon leaves being suppressed at their first appearance; and again when these two main runners have attained about two feet in length, in order to produce fruitful laterals, for otherwise they become too much drawn and long jointed. Those that are from cuttings have far less vine, and do not require topping until they show fruit. When the melon is in flower, watering over head must be dispensed with, and gentle vapour only occasionally raised to nourish the leaves, for it would be injurious to keep the flowers too moist at this time. Every female blossom must now be carefully impregnated, and as soon as the fruits are set and beginning to swell, plenty of moisture and a closer atmosphere will be of the greatest service till they are swelled full size, when moisture at the root and also vapour on the leaves must be finally dispensed with. These judicious observations from a correspondent of Mr. Loudon prove that the melon requires much careful treatment. The raising of cucumbers is much easier, but the great superiority of the other gives it a just claim to extreme care. Those gardeners who provide luxuries for the table, pot single plants to produce a single fruit for the stove-house.

The impregnation of the blossoms is effected by applying the pollen of one flower to the stigma of another, and this is done by pinching off one of the male flowers, and after carefully stripping it of its corolla, so as not to injure the stamen or anther, inserting it into the female flower, and leaving it there. The same plan must be adopted for cucumbers grown in frames, at an early period of the year, on account of the little chance there is of plants so situated, at such a season being casually impregnated by bees, &c.

You may sow cabbage seed, and likewise celery, in a mild heat. At the latter end of the month, supposing the weather favourable, you may pot the tender annuals that were sown a month or six weeks ago, putting three or four plants into each pot. Make cuttings of everything you want, and part roots, and make root cuttings of those plants which are so propagated. With respect to cuttings generally, I cannot forbear quoting the experience of that highly-gifted author and practitioner, Mr. Loudon, respecting the advantage of multiplying plants by their means, instead of by seedlings.

"In an atmosphere as above described, let the cutting-pots, prepared in the following manner, be placed half a day previous to their being used, in order that the mould may be warm, to prevent a check by cold soil, to the bottom of an exotic cutting. If provided with a small crystal bell glass, or a small hand light, closely glazed, either of these may be used; but if provided with neither (which is nothing uncommon), you can doubtless command as much glass in square or fragment, as will cover the mouth of a 48-sized pot.

"The cuttings should be taken from the extremities of the healthiest vines, cut close below the third joint from the tip, and inserted in thumb-pots filled with leaf-soil and loam mixed, about half an inch below the surface of the soil; and these placed in the bottom of a 48-sized pot, and the cavity between the two pots stuffed with moist moss, and the glass laid over the top of the outer pot, which ought to be plunged into a hotbed to the brim.

"This is an improvement in striking cuttings which I have never made known before, nor have I ever seen it practised by any one else. It is a common way to fill a pot three-fourths full of soil, and in that to insert the cuttings under a pane of glass; and I have no doubt, when those that have practised that mode come to see this simple improvement, so much more workmanlike and applicable, not only to melon cuttings, but to all sorts of cuttings—exotic, greenhouse, and hardy, they will feel nowise reluctant to relinquish the old way.

"The advantages of this mode are, when the cuttings get up to the glass, which they generally do before they have struck root, the outer pot can be changed for one a little deeper, and the moist moss serves the twofold purpose of conducting heat and moisture; and as the heat of the tan or dung-pit will be 30° or 40° above that of the atmosphere of the house or pit (a good tan-bed will range about 110° at six inches deep), it will be communicated through the outer pot to the atmosphere around the cuttings, thereby accelerating their striking root. This high atmospheric heat is an advantage possessed in common with the old system over the bell glass propagating pot."

Dahlias may be put into hotbeds during any part of the month, to make them push. The seeds of Dahlia, Calceolaria, Polyanthus, and of various annual flowers and kitchen vegetables, may now be sown in mild hotbeds under frames. Peat or heath mould is the best covering for Calceolarias, and when they have put out two leaves, they should be pricked out into two-inch pots, filled with good mould, and transferred to four-inch pots when their tissue has overspread the sides. Sow successions of celery and cauliflower in cool beds, and after three weeks the seedlings will be fit for pricking out into fresh ones.

Pot all the autumn propagated plants in framed pits, so as to have them well rooted and turned out in April, in order that the pots may be disengaged for a new succession of plants, which ought at this time to be making progress in a propagating frame.

Open Ground.—Keep the Auriculas free from insects and diseased leaves, and replace the old mould at the surface with fresh; and if you have any under common garden frames, be most particular to give them air. When the trusses are rising to the heart, earth up the stems of Polyanthuses with fresh compost, and as Tulips appear above ground cover them up well with sand, which is some security against frost, and otherwise serviceable to them. Plant out Anemones and Ranunculuses in drills seven inches apart and four inches between the plants, which you should put in with a trowel; and if frost have pulverised the earth, so much the better.

The middle of this month is the best time for providing scions, for grafting rose-trees and fruit-trees next month: these should be selected with judgment as to the sorts, and pruned off, where they can best be afforded, in lengths of from two to three inches, separated and labelled. When you have arranged a sufficient number, and rubbed off the buds, stick the thickest ends into moist clay, closely pressed round them, and then put them thus clotted into a pot of earth, in which they may remain under some shed until wanted. At the close of this or the commencement of the next month, time, which will be more precious then than now, may be saved by this timely preparation of scions, where much of this nursery work is to be performed, and you will thus have the scions in the best order for grafting, for this treatment will test their vigour: those that shrink and become feeble, you will reject out of the number prepared, which should considerably exceed the number actually required. Provide stocks, if you have not already done so, for grafting and budding during the ensuing season.

In the *Kitchen Garden* pursue the works of digging, trenching, turning composts, &c., in open weather; and in allotting portions of ground for particular seeds or plants, endeavour to change the crops as much as possible, because, by the frequent recurrence of the same in any given spot, they degenerate (generally speaking), and by depriving the soil of peculiar alimentary substances, or by making frequent deposits of the same kind of excretion, they render that soil indisposed to their individual support, though fertile for other families of plants. Another cause why the culture of a particular tribe without variation should be discontinued in the same ground is, the *mechanical* effect which it may produce on its soil, by rendering it, for instance, excessively friable, or the contrary. No annual vegetables ought, prudently, to succeed each other; vary them therefore as much as you can. You will find that celery gives a good preparation for carrots, turnips, parsnips, onions, and early cauliflowers, or for peas with potatoes and winter greens or brocoli between the rows. Autumn-sown onions may be succeeded by spinach, lettuce, &c., and early cauliflowers by autumn onions. Spring-sown onions will be advantageously succeeded by cabbages in beds, with scarlet runners between; and if the cabbages stand all summer and next winter the ground will come in in the spring, along with brocoli ground for celery, potatoes, and peas—the peas sown on the ridges.

During rain you can find employment, besides what the stovehouses and conservatories afford, in making and repairing mats and straw covers, shades for Dahlias, preparing stakes, cutting shreds, making paper bags for the bulbs of next year, &c., &c.

If the season be mild you may sow, towards the close of the month, a great variety of seeds in the open air, but do not be tempted to sow by a *pet* day, which may be succeeded by a deluge of rain and heavy frost. If however seeds and labour are of no great value to you, there can be no objection to your adventuring a little in warm borders, for the sake of obtaining early productions —carrots for instance: but be prudent in this particular. Kidney-beans are so delicate, that there is no use in sowing them yet out of doors, at least without some artificial protection. Peas and beans should be sown for succession and salading and early cabbages should be planted out, as well as rocambole (Spanish shallot) and Jerusalem artichokes. Seakale may now be abundantly forced in the open garden with litter and pots. Protect the wall fruit-trees that are in blossom from frost by light matting, thin canvas, or (as Abercrombie recommends) by interweaving through the branches boughs of evergreens from time to time.

WATER, AND ITS PURIFICATION.

In *Enquire Within* (1669) we have pointed out the various uses of charcoal as a purifier, and in the same work we have pointed out the effect of wood ashes (charcoal) in softening hard water. The *Illustrated London News* has published an excellent article, entering more fully into the subject, and from this source we derive many of the following remarks and facts:—

The great importance of the use of pure water for domestic and dietetic purposes is now so generally recognised that it might seem almost superfluous to insist upon the noxious influence exercised upon the human frame by the constant use of this fluid when teeming with vegetable and animal putridities at once offensive to the palate and sufficiently evident to the eye. It may not, however, be so generally known that water which to the ordinary observer may seem clear and limpid and pleasant to the taste, especially when first drawn from the receptacle in which it has been preserved, may contain within it the seeds of disease most hurtful to the body, as has been abundantly proved by the microscopical observation and analytical examination of the most eminent scientific inquirers of the present day.

There are three principal means of purification of water. *Purification by deposition* is effected by collecting water in large basins or reservoirs, and allowing it to remain stagnant till the mechanical impurities are deposited at the bottom, after which the supernatant fluid is drawn off. By this means the impurities that are held in suspension are alone separated, while the large size of the reservoirs, and the long time required for subsidence, render the amount of water which can be obtained in this manner very small in proportion to the outlay required; and the putrefying gases which must result from the decomposition of the organic matter which subsides cause the water so obtained to be anything but agreeable.

The second method is that of *purification by reagents*—as alum or lime—which form a weighty precipitate when added to the water, and, while subsiding, take down with them certain organic matters. These processes resemble somewhat in principle the common domestic operation of clarifying liquids, as coffee, by boiling it with the white of egg. This, although found to answer in the laboratory, is difficult of application on an extended scale.

The third method is that of *purification by filtration*. To be perfect, a filter should be capable of separating both mechanical and chemical impurities. To effect this the water is passed through a porous substance, which will arrest the progress of mechanical impurities, and at the same time act chemically and withdraw such matters as are in solution.

On a large scale the process of cleansing now adopted consists essentially in making the water pass through a considerable thickness of gravel, sand, or finely-divided stones, arranged in a succession of layers. In some cases the water is first purified by subsidence as above mentioned, and afterwards made to traverse these layers. The nature of the stone depends much upon the locality of the reservoir, and other circumstances, sometimes the natural constituents in the soil supplying the most appropriate material. In addition to those substances which act by separating mechanical impurities only, other materials, especially animal charcoal and certain species of clay, are used, and these substances possess the remarkable property of withdrawing all traces of animal and vegetable matter, even when in a state of perfect solution. In some forms of filter the water is made to pass from above downwards through the various purifying media; while in others the current is sent in an opposite direction, passing from below upwards, so that the pure water passes to the top, and is drawn off from that surface.

For domestic purposes numerous varieties of filters have been brought before the public. Wool and sponge, as media for filtration, have had their respective advocates: they act mechanically merely. The expense of the former would render it inapplicable on a large scale, and the latter would require frequent renewal: the heavier earthy matters might be retained; but the minute organic and animalcula contents would not be arrested thereby. It is in the removal of these that animal charcoal is particularly useful — its peculiar absorbent powers, both for gaseous and other organic matters being very remarkable. So strong is the affinity which it possesses for vegetable and animal matters, that water containing the most poisonous substances, after being passed through a layer of animal charcoal, may be taken with impunity. Vegetable charcoal possesses the same properties, though in a less degree. Laudanum, which is of a dark port-wine colour, if passed through it, comes out free from colour and odour.

We have, then, in this material a most valuable disinfectant agent. When used alone as a medium for filtration, it soon becomes, however, more or less completely matted together, and the rate of filtration becomes very slow. Hence it requires to be mingled with some other substance, as fine sand, stone, &c., which will hasten the process, and prevent the clogging up of the filter; but as the supply of this material is small, and can be obtained only from certain districts, at some expense, its general use has not been rendered practicable. The patent stone of Messrs. Ransome and Co., which can be manufactured with any amount of porosity, according as it may be required; and its incapability of being affected by ordinary menstrua, afforded a means of artificial filtration which happily suggested itself to the inventor, and which has been employed for that purpose with the most satisfactory result. By the use of plates of this substance and layers of charcoal, and the adoption of the principle of ascension, the most complete separation of impurities, whether in suspension or in chemical solution, or of gaseous matters, the products of putrefaction, can readily be effected.

It will be obvious that the first stratum of materials through which water containing much mechanical impurities must be especially prone to become clogged up, so that a uniform supply of clear water must be difficult to obtain, while the occasional removal of such matters will be difficult without disturbing the water which has been already filtered through it. In the method of filtration which is now most common, that namely by ascension, this difficulty is overcome.

Amongst the prominent filters of the present day, as combining the above requisitions, &c., we would notice those of Messrs. Ransome and Co., in which these gentlemen have happily contrived the most perfect medium for filtration that has come under our notice, and adapted in various forms, for all the requirements of personal, domestic, or manufacturing purposes. By the employment of discs or boxes of a peculiarly fine yet porous stone, enveloping a bed of animal charcoal, they secure the most effective apparatus in an incredibly small space, thus rendering their filters exceedingly portable and light, whilst at the same time, owing to the perfect simplicity of construction, the filtering medium can easily be removed and renovated at pleasure.

These gentlemen have recognised the importance of the principle of filtration by ascension, and their filters and water-purifiers are constructed so as to secure this end, by means of which the mechanical impurities separated from the water subside at the bottom of a chamber prepared for that purpose, instead of being deposited in the heart of the filter, as has hitherto been the case in filters of the ordinary construction.

Our space will not allow of our describing more in detail the various forms of filters manufactured by this firm; they are as numerous as the requirements of the public in this respect; and doubtless full information will be readily furnished to any inquirer, either at their manufactory, Ipswich, or at their dépôt, Whitehall-wharf, Cannon-row, Westminster.

DETECTING POISONS.

In consequence of the numerous cases of poisoning by vegetable poisons, which are difficult or impossible of detection by chemical means, Dr. Marshall Hall proposes to apply a *physiological* test, which consists of subjecting small animals to the effects of a fluid in which (probably) the poisoned organs, or those suspected of being poisoned, have been macerated. Dr. Hall says:—

"I have just performed two experiments, and only two, for want of materials for more.

"I requested Mr. Lloyd Bullock, of Hanover-street, to dissolve one part of the acetate of strychnia in one thousand parts of distilled water, adding a drop or two of acetic acid.

"I then took a frog, and having added to one ounce of water 1-100th part of a grain of the acetate of strychnia, placed the frog in this dilute solution. No effect having been produced, 1-100th of a grain of the acetate was carefully added. This having produced no effect, in another hour 1-100th of a grain of the acetate was again added, making the 3-100ths, or about the thirty-third part of a grain. In a few minutes, the frog became violently tetanic, and though taken out and washed, died in the course of the night.

"I thus detected, in the most indubitable manner, one thirty-third part of a grain of the acetate of strychnia. It appeared to me that, had more time been given to the experiment, a much minuter quantity would be detectible.

"I placed the second frog in one ounce of distilled water, to which I had added the 1-200th part of a grain of the acetate of strychnia. At the end of the first, the second, and the third hours, other similar additions were made, no symptoms of strychnism having appeared. At the end of the fifth hour, the frog having been exposed to the action of 1-50th part of a grain of the acetate of strychnia, tetanus came on, and under the same circumstances of removal and washing, as in the former experiment, proved fatal in its turn.

"I thus detected 1-50th part of a grain of the poisonous salt by phenomena too vivid to admit of a moment's doubt, the animal, on the slightest touch, became seized with the most rigid general spasmodic, or, rather, tetanoid rigidity. And this phenomenon, alternating with perfect relaxation, was repeated again and again."

The subject is one of great interest and importance, though we are inclined to doubt the infallibility, and, therefore, the applicability of the test.

EMPLOYERS AND SERVANTS.

EVERY person is either an employer or a servant, and many persons stand in both these relations at the same time. They hold offices, and employ persons under them.

It is therefore of the utmost importance that the laws relating to the employment of labour should be distinctly made popular. And to this end the following facts will materially contribute:—

Engagements of Servants.—In the engagements of domestic and menial servants, it is generally understood that the engagement may be determined by either party giving a month's warning, or by the employer paying a month's wages, he can enforce an immediate dismissal.

Board Wages.—It is generally supposed that servants thus dismissed can claim for their board during the month. But such is not the case. The services dispensed with being considered an equivalent for the board.

Agreements should be in Writing.—In engaging any description of servant, wherein other terms than those which are usual with persons of such avocation, are more convenient, the terms which are desired to subsist between the parties should be specified in writing, or be capable of proofs by witnesses.

Clerks and Superior Servants.—The rule of giving a month's warning, or a month's wages, does not apply to persons of these classes. Generally speaking an engagement is understood to be for a year, and to expire at the end of a current year. It is probable that three months' notice would be sufficient. But the law is so undefined upon the subject that it is best to have all the conditions specified in writing, and signed by each party. Where an engagement is for any period more than a twelvemonth, it becomes a contract, and must be attested in writing, otherwise such an agreement may, at any time, be declared void.

Stamped Agreements.—A stamp is not required in agreements with menial servants. But it would probably give security and legal force to all agreements if properly stamped.

Agreements should be explicit.—An agreement should clearly express all the conditions entered into, specifying the money, food, clothing, lodging, and other consideration. Some such consideration, however small, is requisite to bind the employed to the employer; an agreement to serve for a term of years, without consideration, in order to learn a given art or business, having been declared void. The smallest payment, or consideration, will, however, render such an agreement binding.

The Employer should be equally bound with the Servant.—A servant may agree to serve, and be held to his agreement for any term; but if the employer has not agreed to employ for the same term, his compliance is not to be inferred from the agreement for servitude on the part of the employed. The employer may, therefore, release himself by notice, as if no such agreement for a term existed.

It is, therefore, important for the interests of the employed, that the employer should distinctly engage to employ for the period that the servant engages to serve.

Forfeits by Servants.—A proper provision in an agreement is, that the employer shall be at liberty to stop out of wages the value of things broken, or destroyed, or lost, by the negligence of the servant. Such deductions from wages cannot be made without express stipulation.

An employer may increase his power over a servant by binding him to make a forfeit, if he leaves his work or his situation, without proper notice. And the clause in such agreement must authorise the employer to make deduction of such forfeit out of the wages, otherwise he can only sue the servant as for a debt in the County Court.

Liveries of Servants.—A livery servant quitting a situation cannot claim the livery, which is the property of the master, unless it has been agreed that he may do so.

Agreements void by Consent.—Agreements may be put an end to with the consent of both the parties at any time, or a new agreement may be entered into and the subsisting one superseded.

Bankruptcy of Employer.—The bankruptcy of an employer does not cancel the engagement with a servant.

Terms, and Wages of Hiring.—Servants are, in some instances, engaged by the day or week, though, according to the usage with such servants in particular districts, the "hiring" is understood to be for a year, and the wages are understood to be but the proportions of a yearly salary.

Apprentices.—There are special laws for the regulation of agreements between masters and apprentices. They are bound by their friends or guardians with their own consent. A master must fulfil the conditions of the indentures. He must not fail to teach the apprentice the trade which he undertakes to instruct him in in the indentures. He must not alter his trade, nor put the apprentice to an occupation which is not provided for in the indentures. If he does, the apprentice may refuse to serve. The magistrates have power of jurisdiction in such cases.

In a future *Interview* we shall explain other points of law affecting the employment of labour.

WHAT IS WINE?

WINE, in *our* acceptation of the term, is the fermented juice of fruit, or of the grape in particular.

Has the word, then, any other meaning?

Yes; in many countries the same word is equally applied to the product of distillation—even to that obtained from grain. In Russia, for instance, corn-spirit is called *cereal wine.*

Is the same or an analogous word used to designate *wine* in many different languages?

Yes; in all the European languages, or in all those which owe their original construction to Europe, since the Roman empire.

What is the process by which grape wine is obtained?

That depends upon the kind of wine sought; upon the colour, and upon a variety of incidental circumstances.

How do you make white wine?

White wine is made by gathering the fruit, whether white or black, trampling it out, or bruising it down to pulp in some way or other, and then immediately subjecting this pulp to the action of a press, or to be trodden down and strained off in coarse bags. The liquor so obtained is collected in vats, in which it ferments actively for several weeks (from ten days to three months), after which it fines itself down, and becomes drinkable wine. It is sometimes drawn off its lees into other vats, sometimes not, according to the local practice of the growers. In districts in which the growers are very particular as to the colour, flavour, &c., of the liquor, the fruit is carefully sorted; all unripe or rotten berries being removed, and the white and black grapes *separated*. But these are exceptional precautions.

How do you make red wine?

The process of making red wine differs, in general, from that employed for white, only as regards the maceration of the pulp (*husks*) of the fruit in the liquor *during* fermentation, whereby the colouring matter is dissolved into the liquor, and conveys a hue, more or less dark, according to the nature or particular variety of the fruit. There are a few varieties of black grapes, such as the *Teinturier*, of which the interior of the berry, or juice, holds a certain portion of the colouring matter naturally in solution at maturity; but these are exceptions to the general rule. The great majority of grapes, whether white or black, have a pale greenish juice, when ripe; and this juice assumes a more decidedly yellow hue, as it undergoes fermentation. The husks alone, of the generality of black grapes, contain the beautiful purple or crimson colour which is conveyed to the liquor by the process just described.

The result of fermentation is to change a portion of the grape-juice into alcohol; but what is the proportion of this alcohol to the entire volume of the fluid?

This varies greatly, according to the more or less saccharine nature of the fruit (because, obviously, the more sugar, the more spirit), the manipulation, the temperature, and so on. It is greater in *white* than in *red* wines, generally, for two reasons:—*first*, that the white grape is commonly more saccharine than the black; and, *secondly*, that the maceration of the husks during fermentation takes up a considerable portion of the sugar, which would otherwise enrich the liquor.

The greatest proportion of alcohol with which I am conversant, and I believe the greatest that can be obtained without artificial or exceptional interference, is sixteen per cent.; the average of white wines in Southern Europe is not above thirteen per cent. The least proportion that I have detected has been five per cent.: this was, no doubt, a somewhat diluted liquor.

You say the greatest proportion is sixteen per cent.; do you speak of new or of old wine?

I speak of new wine, of course—that is, of the result of *primary* fermentation; because there is a slow and secondary fermentation, which gradually eliminates more spirit in variable proportions.

What is vinegar, and how is it formed?

Vinegar is simply a soured fermented liquor. The presence of other components besides those of alcohol and water is indispensable to its formation. Hence it arises in wine during secondary fermentation, from the excessive activity of the ferment upon the residuary sugar, which deranges the balances in the existing combination.

How is the elimination of this product to be avoided?

In strong spirituous wines no precaution is necessary, because the abundance of alcohol resists the agency of the ferment. It may therefore be averted by the artificial addition of spirit to the liquor, immediately after the subsidence of the primary fermentation. But this is a spurious method. It can also be averted by preserving the liquor in *perfect quiescence* (inasmuch as motion disturbs the precipitated ferment), at an *uniform* temperature of between 60° and 70°. Are not the *red* wines in our market the most spirituous of all?

Yes, certainly; but I speak of *natural* wines only. The red wines to which you allude are wholly artificial. Port wine is rarely found to contain less than twenty-two per cent. of alcohol, as we import it; but before it is made up with brandy, it does not contain more than nine or ten per cent. In the *strict* interpretation of the Treasury Letter of June 28, 1853, which limits the strength of wine (as such) to thirty-three per cent. of *proof spirit*, hardly any port wine could be cleared except as sweetened spirit (at 20s., instead of 5s. 9d. per gallon); because wines which contain from twenty-four to twenty-six per cent. of *alcohol* are clearly above the prescribed strength of thirty-three per cent. of *proof spirit*.

Do you draw any particular inference from this comparison between *white* and *red* wines?

Yes, indeed. I infer that for curative or dietetic purposes, the red wines—I mean, of course, good sound red wines, like Roussillon—are to be preferred to white. The stimulating virtues of the *red* wine are more genial and gentle, those of the *white*, generally speaking, more irritating. There are, doubtless, particular idiosyncrasies which serve as exceptions, and the white wines might accordingly be found to agree better with particular individuals than the red (supposing both to be equally pure). But there are quaint idiosyncrasies of this kind respecting the effect of all articles of food and all drugs; and these, of course, it is the medical man's province to detect. I only speak of generalities.

Referring again to the condition of wine, which do you consider to be the more wholesome, new or old wine?

To a person in sound health undoubtedly old wine, because the new wine contains the materials for generating acidity, and the old wine would not be too stimulating. To an invalid, neither very new nor very old wine; because the former would be apt to operate as just described, and the latter would have become by so much *more* irritating as it had become *less* nourishing. For convalescents drinking—that is, as a *roborant*—I should prefer to recommend a sound wine about four years old.

What do you consider the highest attribute of pure wine?

Its *natural* fragrance and after-taste. I say natural, emphatically, because artificial means are employed to convey the peculiar aroma which characterises first-class wines (especially in the northern and central regions) to liquors of coarse and inferior quality.

What am I to understand by your remark, as regards the "northern and central regions in particular?" Is it that you adopt a definite and *quasi* geographical rule in your classification?

Approximately so. I consider the European wine belt, including the Mediterranean Islands, to extend from the 35th to the 50th or 51st parallel of north latitude; and that the most perfect wine, in all respects, is to be found, as a general rule, between the 41st and the 47th parallels. The most northerly region, such as that of the Rheingau, produces the climax of fragrance, and the most southerly the climax of saccharine.

Can you describe such a wine to me?

It is fragrant, dry, clean, bright, fruity, and generous; and it leaves a pleasant after-taste, which no imperfectly fermented or loaded wine ever does. The flavour is smart and racy; but never at all sweet. Sweetness can only be detected in imperfect or loaded wines; and these all require manipulation with spirit to restrain a destructive secondary fermentation.

A perfect wine will preserve itself; it is constitutionally enduring, and continues for many years to acquire delicacy, as it slowly elaborates its insensible fermentation.

None of the luscious or fiery liquors are properly called *wines*, in our sense of the term:—they are compounds. However great might have been the natural capacity of the must to be converted into fine wine, all its excellence is submerged by the preponderance of undecomposed saccharine which it has been forced to retain in solution, and by the spirit with which it has been drenched to narcotise the rebellious ferment. It can never afterwards become either fragrant or clean, like a pure wine; and even its colour will undergo changes which do not occur in liquors that have been carefully carried through the natural processes of fermentation. Thus the more *tawny* I see a wine become with age the more I suspect it.—*Foster and Ingle, London.*

HISTORY OF KEYS.

At a recent meeting of the British Archæological Association, Mr. H. Syer Cuming read a paper on the History of Keys. He pointed to a strip of bark and a thong of leather, as the first means by which property was secured, prior to the advanced stage of social refinement when permanent houses were constructed, and the door and the coffee fastened with bolts, latches, and bars. Homer was cited as the earliest writer who mentions anything like a key, and special reference was made to the primitive locks and keys of wood of the ancient and modern Egyptians. The iron keys of Egypt were described, and illustrated by examples from Thebes, and the curious fact pointed out that nearly similar specimens are met with in Western Africa. After a brief notice of Greek keys, attention was directed to the Roman era, and a minute description given of the fixed and moveable locks, the dentated, piped, and broached keys, and of the variously-formed bows surmounting the stems. Mention was made of the small keys attached to finger-rings, and of the *clavis adultera*, the false or skeleton key of the Roman housebreaker. The Anglo-Saxon and Norman keys were then dwelt upon, and the various forms and fashions of the key-bows from the thirteenth century down to a later period were described. The superstitious belief in the magical powers of the key, of its employment as a heraldic bearing, and its frequent adoption as a sign in former times, were next alluded to; and Mr. Cuming concluded his paper (which was profusely illustrated with examples of keys of all ages, from the days of the Egyptians to those of George IV. as shown in the key of the late Carlton House) by enumerating the different modes by which keys have been held together, showing that a ring was among the earliest as well as latest contrivances for the purpose. It was remarked, that two objects were frequently found appended to the keys of the doors of stables and cow-houses, namely, a perforated flint and a horn; the former of which was declared to be an amulet to guard the creatures from the attacks of nightmare, and the latter, an emblem of the god Pan, the protector of cattle, and hence regarded as a charm, and both of which have been used from the most remote antiquity.

Death Warrants.—It having been incidentally announced in the *Hants Independent* with reference to the convict Abraham Baker, that "the usual death-warrant signed by the Crown had not yet been issued," allow me to prevent, as far as possible, error in the minds of such of your readers as are not acquainted with legal formalities, by mentioning that (except in the case of a peer of the realm) there is no such thing as a death-warrant ever signed by the Crown or by any one or more of the officers of the Crown, the only authority for the execution of a criminal convicted of a capital crime being the verbal sentence pronounced upon him in open court, which sentence the Sheriff is bound to take cognisance of and execute without any further authority. It is true that a written calendar of the offences and punishments of the prisoners is made out and signed by the Judge, of which a copy is delivered to the Sheriff; but this is only a memorandum and not an official document, and it is optional with the Judge to sign it or not. I should not venture to occupy any portion of your valuable space upon this matter, but I am well aware that it is a subject upon which very great and general misapprehension exists.—I remain, sir, your obedient servant, Lex.

To Preserve Fruit.—Grapes and other fresh fruit may be preserved and kept ready for use for a considerable time if carefully packed in mahogany sawdust.

THE DWINA.*

A RUSSIAN BALLAD.

STONY-browed Dwina, thy face is as flint,
Horsemen and waggons cross, scoring no dint,
Cossacks patrol thee and leave thee as hard,
Camp-fires but blacken and spot thee like pard,
For the dead silent river lies rigid and still.

Down on thy sedgy banks picquet the troops,
Scaring the night-wolves with carols and whoops,
Crackle their faggots of drift-wood and hay,
And the steam of their pots fills the nostril of day,
But the dead silent river lies rigid and still.

Sledges pass sliding from hamlet to town,
Lovers and comrades, and none doth he drown,
Harness-bells tinkling in musical glee,
For to none comes the sorrow that came unto me,
And the dead silent river lies rigid and still.

I go to the Dwina, I stand on his wave,
Where Ivan, my dead, has no grass on his grave,
Stronger than granite that coffins a Czar,
Solid as pavement, and polished as spar,
Where the dead silent river lies rigid and still.

Stronger than granite? nay, falser than sand!
Fatal the clasp of thy slippery hand,
Cruel as vulture's the clutch of thy claws,
Who shall redeem from the merciless jaws
Of the dead silent river so rigid and still?

Crisp lay the new-fallen snow on thy breast,
Trembled the white moon through haze in the west,
Far in the thicket the wolf-cub was howling,
Down by the sheep-cotes the wolf-dam was prowling,
And the dead silent river lay rigid and still,

When Ivan my lover, my husband, my lord,
Lightly and cheerily stepped on the sward,
Light with his hopes of the morrow and me,
That the reeds on the margin leaned after to see,
But the dead silent river lay rigid and still.

O'er the fresh snow-fall, the winter-long frost,
O'er the broad Dwina the forester crost,
Snares at his girdle, and gun at his side,
Gamebag weighed heavy with gifts for his bride,
And the dead silent river lay rigid and still.

Rigid and silent, and crouching for prey,
Crouching for him who went singing his way,
Oxen were stabled, and sheep were in fold,
But Ivan was struggling in torrents ice-cold,
'Neath the dead silent river so rigid and still.

Home he came never; we searched by the ford,
Small was the fissure that swallowed my lord,
Glassy ice-sheeting had frozen above
A crystalline cover to seal up my love
In the dead silent river so rigid and still.

Still by the Dwina my home-torches burn,
Faithful I watch for my bridegroom's return,
When the moon sparkles on hoarfrost and tree
I see my love crossing the Dwina to me
O'er the dead silent river so rigid and still.

Always approaching, he never arrives,
Howls the north-east wind, the dusty-snow drives,
Snapping like touchwood I hear the ice crack,
And my lover is drowned in the water-hole black,
'Neath the dead silent river so rigid and still.

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* From *Poems of Ten Years*, by Mrs. D. Ogilvy.

THE OLD LOVE.*

THE roving seasons come and go,
In each, like flowers, fresh passions blow
They bud, they blossom, they decay,
And from my heart's soil pass away,
But still the old love dieth not.

Soft, pensive, tender, warm and gay,
But transient as an April day,
Each in its short but potent reign,
Sweeps like a flood through heart and brain,
But that old love it quencheth not.

Listen, ye breezes, ye who dance
O'er the blue waves to sunny France,
I have a message ye must bear
To a sweet maid who dwelleth there,
Tell her the old love dieth not.

HAPPINESS.

IF solid happiness we prize,
Within our breast this jewel lies,
And they are fools who roam.
The world hath nothing to bestow—
From our own selves our bliss must flow,
And that dear hut our home.

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* From *The Maid of Messene and other Poems*, by E. H. Pember.

DISINFECTANTS.

AN INTERVIEW WITH DR. MUSPRATT.

DR. MUSPRATT, with whom we have the honour of a personal acquaintance, is editing a most elaborate work upon "*Chemistry, as applied to Arts and Manufactures.*" In the second volume of this work he gives an instructive chapter upon Disinfectants, which he says are, "Properly speaking, such as remove the *causes* of infection; but, as the French signification has been adopted in England, the removal of any injurious taint is also understood." This subject being of extreme importance to the welfare of families, we will accept with gratitude from Dr. Muspratt those facts which have a practical application.

Washing with pure water, to remove all putrescent or putrescible matters, has always been, and must continue to be, the most important disinfectant whenever it can be applied. It has generally been found that the soil is a very valuable disinfectant, decomposing animal matter with great rapidity, and sending out gases which are, on the whole, innocuous, unless sufficient space has not been allowed for the remains. Efficacious as the soil is for the disinfection of bodies buried in it, it has been found in large towns that the amount of soil covering the dead has been insufficient: most nations, therefore, have interred their dead in the suburbs and less populous localities.

A process of purification after the burial of a person was, among the ancients, nearly universal: sometimes it resolved itself into a mere religious custom, but this had evidently arisen out of a distinct act of cleansing. Among the Romans, certain days were set apart for the ceremonial cleansing of the family, and the house was swept out by an officer appointed for the purpose.

Embalming has sometimes been resorted to in Europe from the very earliest times, and with great success. The remains of the French kings disinterred at St. Denis by the revolutionists, preserved their countenances, it is said, perfectly when first uncovered; but immediately yielded when exposed to the air. Sometimes the preservation is effected by the mere action of currents of air. This may be readily believed of a warm climate, but the same result occurs at Bonn, in the vault of a chapel, where the bodies of the buried monks are dried up or shrivelled, but not decomposed. No means, whatever, it is said are used to obtain this result, further than placing an open coffin containing the body in a dry repository where the wind is continually blowing.

Infection arises from decomposing matter, which, coming in contact with that which is healthy or sound, induces a continuation of the decay. It is in this wide sense that the word is used when *disinfection* is spoken of. Matter may be thrown into this state in various ways and situations. Vegetable and animal substances decay spontaneously, even if left to themselves, without the interference of any body in a state of decay. No infection is known without the presence of such putrefying agent. The origin and history of all plagues and infectious diseases point to this satisfactorily. No chemcial re-agents, properly so called, have been known to give rise to contagion. Gases are known which destroy health, and by producing decomposition may cause such decay to proceed in the system that the exhalations may engender infection; but even in this case it is produced by the organic substances, though the distinct and direct injury is effected by the chemical agency. What, then, are the sources from which disease may arise?

Here Dr. Muspratt enumerates certain causes which do not relate to those matters to which, alone, we think it needful to direct the attention of our readers. We therefore pass on to his remark that—

When a country is badly drained, and there is no outlet for the products of the decomposition of plants but the air, it often happens that disease spreads rapidly. If the land be properly drained, these emanations, passing through the soil, become disinfected, and a comparatively healthy atmosphere results. Marshes in all ages have been unwholesome; but they are so in proportion to the temperature and the state of vegetation. A damp climate and a moist soil, such as those of Holland, do not produce disease in an equal degree, with a similar condition in the tropics, where the decay is more accelerated. Still, even in Holland, those who live in the immediate neighbourhood of that part of the country, which is adjacent on one side to the sea, and on the other to fields below its level, are far inferior in appearance to those who live where the land is elevated only a foot above the ocean's surface.

Diseases sometimes seem to arise from a greater expanse of sea than above alluded to, at least when connected with one or more great rivers. A reddish vapour was seen by the inhabitants of the surrounding country, to their great alarm, to arise out of the Yellow Sea: after floating about, it dispersed itself over the land, and produced, or at least, it was followed by that most dreadful outbreak of cholera, which afterwards passed over all Asia, ultimately coming to Europe. Means of cure are not readily found for such cases, but recourse must be had to energetic disinfectants.

Ponds, and such collections of water as are too shallow to prevent rapid decomposition, and which allow the sun's rays to enter so as to encourage the growth of plants at the bottom, become fertile sources of disease. They can only be disinfected entirely by the destruction of the vegetation, generally accomplished by complete drainage.

Masses of matter in a state of decomposition around a dwelling may easily become centres of contagion; and the best method of dealing with these is to remove them immediately; but if in a dangerous condition, to disinfect them previously, as the removal abundantly spreads the noxious vapours and gases.

A still atmosphere favours the spread of infection, as a whole district or country may become like a closed vessel, rapidly filling up with impure matters, and pestilence being generated. Hurricanes, it is well known, have a powerful tendency to stop the progress of disease. Before the plague of London an unusual calm occurred.

Sudden changes in temperature are likewise injurious, affecting the healthy condition of animals and vegetables, causing decomposition, and occasionally infection. The peculiar condition of the air, called blight, is a state of this kind, but is imperfectly understood. Great natural phenomena in any way interfering with organic life, may accelerate various maladies. Rain has sometimes been so continuous as to cause a whole district to become corrupted, destroying vegetation, and not only starving, but infecting man with offensive emanations. So also great swarms of insects, locusts, and caterpillars, for example; better known in history than by the experience of the present days—droughts and pestilential heats, are similarly destructive of animal and vegetable life. These causes of infection have been recounted, that a distinct view of the opposite, or *disinfection*, may be taken. Vapours arise in all these cases mentioned, and pervade the atmosphere. That organic matter has been found in the air has been sufficiently proved by Ehrenberg, who ascertained the presence of animalculæ; by Vogel and Dr. Southwood Smith, and more recently by Dr. Angus Smith, who obtained it in the moisture condensed from the breath in crowded rooms. A state of the atmosphere in which organic matter does not exist, can scarcely be imagined; even when it comes from healthy bodies it is found to be injurious if allowed to collect; but when emanating from unhealthy constitutions, it must communicate disease more readily. Its first action is in the nasal organ, when nature generally gives notice of contiguous evil; but when persons are accustomed to living in impure air, habit causes them to be insensible to its effects. It must next enter the lungs, where the blood absorbs it; distemper is thereby communicated to the most vital parts in a direct manner.

The subject is of so vast importance, and Dr. Muspratt's communications upon it are so lucid and useful, that we will seek another *Interview* with him.

RARETIES AND RELISHES FOR THE TABLE.

DOMESTIC discoveries are constantly being made; and though, too frequently, useful hints die away after serving the purpose of a Newspaper paragraph, we think that among the readers of the *Interview* there are many persons who will not let practical suggestions slip. We therefore bring together, as peculiarly adapted to the present season, the following useful suggestions for easily supplying the table with rarities. We commence with a paragraph, extracted from the *Gardener's Chronicle*, giving instructions—

HOW TO GET GREEN PEA SOUP IN WINTER.—"We shall have visitors early in February, and must have green pea soup once or twice at least. Tell the gardener to provide a supply of young peas." Such was the order given one Christmas-day to the cook in a great household, and duly communicated by the culinary to the horticultural department. "Fresh green peas in a month, in the middle of winter! the thing's impossible," cried the astonished gardener. "My lord can't have given such an order; we haven't a house or a light to grow them in—and if we had ——." "We must have them for all that," was the curt rejoinder; and the gardener was left to discover the *quo modo*. In his despair the worthy man bethought himself that young peas and young pea leaves tasted much alike, and that, perhaps, the one might be as good for soup as the other. So he took some shallow pans, planted them pretty thickly with dwarf Spanish peas, put them in his early vinery on a shelf where he sometimes grew strawberries, and where a good heat was kept up. The peas soon began to grow; they had air as much as it was possible to give it them, and by the beginning of February were six inches high, well furnished with healthy tender green leaves and stems. The supply thus obtained was cut like mustard and cress, and handed over to the cook, who declared that it made better *purée* than if he had had green peas themselves. And from that time forward peas were forced at —— as regularly as French beans; and all lovers of good living wondered how Lord —— continued to have such capital *puree* of green peas whenever they visited him in the winter.

To this we will add the following from our own note-book:—

HOW TO OBTAIN CRESS ALL THE YEAR ROUND.—This may be done in a manner to supply both a salad and an ornament for the table. Take bottles, baskets, plates, dishes, or any other articles, and cover them with flannel, old pieces of baize, cloth, or other absorbent material. The cloth should be cut out, and sewn so as to form a perfect shape for the article to be covered. Saturate the cloth with water after the covering is complete, and then sprinkle thereon mustard seed, or pepper seed, so as equally to pervade the surface, not too thick, nor too scanty. In a little while the gluten of the seed will become softened, and fix the seed firmly to the cloth. Place it in a dark and moderately warm place, and moisten it occasionally. When the seeds begin to germinate, bring them to the light, and as their strength increases, expose them as opportunity may occur, to the sun. You will soon have cress from an inch to two inches long, growing in an ornamental shape, which may be set upon the table, and the cress cut from it as wanted. This may be done at any season of the year.

TO OBTAIN MUSHROOMS ALL THE YEAR ROUND.—Instructions for the formation of artificial mushroom beds, by which button mushrooms may be obtained all through the year, are given in *Enquire Within* (250).

TO OBTAIN SEA KALE IN THE WINTER.—Early in November cover the surface of the bed, including the drills and the intervening spaces with stable litter, to the depth of two and a half feet. The plants will be matured by Christmas, and will yield abundantly in January. This vegetable is easily and cheaply forced, and blanched in any dark, warm cupboard or cellar. Supplies of shoots may be obtained for three months successively in this way. They may be planted in old boxes, baskets, mawns, &c., and will yield abundantly.

How to make use of Endive.—It is strange that Endive with us is only known as a salad, dressed green with oil and vinegar, and yet how excellent a vegetable it forms those who have visited the Paris restaurants must well know. It is cooked on the Continent, the bitterness removed, and an excellent dish produced in the following manner:—Chop up Endive or Spinach very fine (cooks say for ten minutes); boil it first, then put it into cold water; then drain the water off, and squeeze it out till quite dry. Take a good tablespoonful of flour, and a piece of butter about the size of a walnut; mix them well near the fire, and boil them in a pipkin. Put this mixture with the vegetable, and about a teacupful of water, for fear of burning; add a little salt and pepper, and boil till done. Endive is the most universally popular dish in the country, and a most savoury morsel. The best method of preparing it is as follows:—Take two good Endives, not blanched, separate the leaves, and boil them in two waters (to extract the bitter). If still bitter use a third water, but ten minutes before they are ready throw in a handful of sorrel leaves. When ready take them out and strain them, and put them back in the saucepan with a piece of butter the size of a walnut, pepper and salt, and a table-spoonful of any rich gravy. Shake them well over the fire till all is incorporated, and send them in hot. On no account chop the leaves.

An excellent Spring Vegetable to be had for the Gathering.—Young nettles supply an excellent vegetable for the table, boiled and eaten as greens. They grow abundantly, and are pronounced as not only highly relishable, but very healthful. Having given these hints, we shall be happy to receive suggestions of a similar nature.

HOW TO RESTORE OLD APPLE TREES.

It is generally found that after an apple tree has borne for a certain number of years, it becomes comparatively unproductive. It has been usual in such cases to remove the old tree and replace it by a young one. This may be obviated by regrafting the old tree; and according to experience, the *older* the stock the better is the quality of the fruit. Saw or cut off the ends of the branches where they are about the size of a man's wrist, or rather less, and insert two or more scions in each, according to circumstances. In the course of three years a large full-bearing tree will be obtained. To protect the new grafts from damage in high winds, engraft the half of the tree at one time, and leave the other to form a shelter, and complete the other half when the grafts are sufficiently grown to return the shelter. It is scarcely necessary to add that this precaution must not supersede the usual appliances for giving the scions support, by means of poles attached to the branches. It may also be remarked that the productive powers of apple trees are frequently impaired by the want of sufficient attention in gathering the fruit. The greatest care should be observed in removing the apple, that the bearing spur be not broken or injured thereby.

HOW TO MAKE FLOWER BEDS.

Most persons, amateurs especially, find considerable difficulty in marking out irregularly shaped beds, such as are employed in what is termed the picturesque style of gardening. Let them employ a thick rope, which, by being laid upon the ground, can readily be coiled in any direction, until the desired shape is obtained. This would, indeed, be a much better mode than the usual one of staking out the outline; with the rope, the eye is enabled to perceive the whole form of the bed at once, and consequently to detect a fault and remedy it immediately, before any part of it has been cut out, thus economizing time and labour.

TO DEFEND GARDENS FROM FLOODS.

Twist straw into bands, and with an iron pin, ten inches long, curved inwards at the bottom, and with a wooden mallet, drive the straw band six or eight inches into the bank, there to remain; then withdraw the pin, and at a distance of four inches again drive in the straw, and so continue to affix the straw into the bank and soil liable to inundation, in direct lines, till the whole surface be covered, thus forming a close and smooth piece of straw-work. It is advisable to commence this operation at that season of the year when the soil is tolerably dry, and the waters are at the lowest; not only for the convenience of the operation, but especially for sowing the grass seed under and within the straw-bands; as the grass soon springs up between the straw, and forms a beautiful turf, which of itself afterwards becomes a natural barrier against the waters.

THE EYES, AND HOW TO MAKE USE OF THEM.

When the eye is in a perfectly healthy condition, we ought to be extremely careful not to tamper with it so as to derange any of its functions; for instance, it is highly injurious for us to pass suddenly from the dark to the full blaze of a lighted room, or still worse into that of open daylight. In some extreme cases blindness has been the result of such an act.

In viewing an object we should take care that as much of it as possible is in focus at once, but we must not fall into the error of straining the eye to give us the perfect picture, otherwise injury will result.

Very great benefit will arise from the use of the power of concentration of sight: thus we ought to endeavour to see only one part of an object at a time, and to gradually complete the survey of its different parts, in order to get the correct idea of it; for if we look too generally at objects, we shall find that they are none of them properly in focus, and a confusion of ideas is the consequence.

It is injurious to the sight to be continually using the eye for one distance of objects only, as from want of use the eye loses that ready adjustment so essential to the perfect appreciation of objects seen at different distances apart: thus we should never look too steadfastly nor for too long a period at the characters of a book, but from time to time look off at objects at a greater distance; this plan not only secures the use of the adjusting powers of the eye, but relieves the retina from the great strain it has undergone by the too violent contrast in the image formed on it, namely, black and white.

We should avoid as much possible viewing objects with one eye only, but on the contrary endeavour to direct both eyes on them, in order that we may form more correct idea of their size and distance; for by the use of one eye we can appreciate neither size, solidity, nor distance, in a complete and satisfactory manner.

In reading of an evening by an artificial light, we should be very particular in the position of the candle with respect to the book, so as to prevent as much as possible the direct light from entering the pupil. The best means of accomplishing this end is, to have the lamp or source of light so placed that it may shine over the shoulder on to the paper or book we are perusing, for it will readily be seen that by this arrangement the eye receives no more light than that proceeding immediately from the page before it.

These matters may appear very trivial to those whose sight is not yet impaired, but constant attention to them will ensure the enjoyment of that great blessing, perfect sight, for many years beyond the usual limit.

Imperfect sight may be defined as that state of vision in which objects are not easily discerned with distinctness in ordinary light and at the usual distances; thus both long and short sight may be considered as diseases of the eye, for those who are short-sighted see things distinctly which are close to them, while objects that are more distant are confused and appear indistinct: on the contrary, the long-sighted see distant object with perfect clearness, and close ones with difficulty and confusion of outline.

The first symptom of the change in the eye inducing long sight is, that we are obliged to remove every object to a greater distance from the eye before we can see it distinctly. Thus in perusing a newspaper, or any small print, we are sometimes obliged to hold it nearly at arms' length before distinct vision is produced; whereas in healthy vision we should have been able to bring about the same result at a distance of twelve inches from the eye. Although we may see the type quite clearly under these circumstances, it is a system that is highly detrimental to the eyesight, and should on no account be persevered in, as it will ultimately increase the failure of the eye, and oblige the optician to use much stronger glasses before a remedy can be applied than if assistance had been sought at an earlier stage of the disorder; whereas it not unfrequently happens, that those who take to spectacles in time are after a while enabled to lay them aside and to see objects with the unassisted eye as clearly as before their use.

Another sign of the decline of sight is when we are obliged to hold the candle between the book or paper and the eye before perfect distinctness can be attained; this causes a contraction of the pupil necessary to our perfect appreciation of objects. Now nothing can be more injurious to the sight than this habit, for the strain thrown on the eye by so much light in such close proximity will eventually dull the perception of the visual organs.

Immediately an individual discovers that the above applies to his own sight, he should without delay seek the assistance of glasses, and if care be taken in the selection, he will be entirely relieved from the inconvenience. Many persons find from the above defect that it is more difficult to read at night than in the daytime; such persons ought to be provided with two pairs of spectacles, the one to be used by candle light, being rather stronger in power than that in use in the daytime.

One unmistakeable indication that we require spectacles is, that on reading a book or newspaper the letters appear after a short time confused, and run into the other, appearing double and treble, and convey the idea of the eye having a veil or mist before it. The eyes from this cause become so fatigued, that it is found necessary to be continually closing the lids, and to relieve them by looking frequently at different objects, or by stimulating them by friction. If we neglect the means we have at our disposal to correct this distressing state of vision, we shall assuredly suffer for it at no very distant period, and eventually be obliged to use glasses of a much greater power than if we had taken to them in time, to the permanent injury of the sight, and in some instances to its partial loss.

WHAT'S IN A NAME?—Hotels and public houses have a phraseology of their own. On an inquest some years since on the body of a gentleman who died suddenly at a London hotel, one of the witnesses, Mr. Booth, deposed that the chambermaid desired him to run for a doctor, as, Number Four was in a Fit! At one of the suburban Tea Gardens, a waiter laden with a tray containing tea and muffins for twelve, who observed a bolt before the bill was paid, roared out to his brother attendant: "Run, run, Bob! there's two teas and a glass of brandy and water escaping over the palings—catch 'em!"

THE PERPETUAL COMEDY. — The world is the stage, men are the performers. Chance composes the piece; Fortune distributes the parts. The Fool shifts the scenery; the Philosophers are the spectators. The Rich occupy the boxes, the powerful have a seat in the pit, and the poor sit in the gallery. The fair present the refreshments, the tyrants occupy the treasury bench, and those who are forsaken by lady Fortune snuff the candles.

CURIOUS EXTRACTS

From "King Charles's Newspaper,"

TO ALL MOUNTEBANKS, TRAVELLING COMPANIES, INNKEEPERS, &c.—Whereas on Sunday, July 4, 1790, Samuel Bell, my apprentice, did absent himself from my business without my leave or knowledge, and has not since been heard of, this is to caution all persons not to keep or harbour him after this publick notice, as I shall in such case prosecute any person or persons with whom he may be found. Samuel Bell is about five feet five inches, dark complexion, black hair, which he wears tied; had on, when he went away, a blue coat, black breeches, and half boots; is about nineteen years of age, a very good tumbler, and can throw a great number of flip-flaps, &c.; plays the clarinet and takes snuff.—N.B. Whoever will give notice of him to me, Mr. P. Astley, at the Royal Grove, Westminster Bridge, so as he may be secured, shall be rewarded for their trouble.

A FEW days since, the Rev. John Wesley was married to Mrs. Vazel, of Threadneedle-street, an agreeable widow lady with a large fortune.—Feb., 1751.

SATURDAY died Mrs. Wilks, widow, mistress of the Cock Inn in Aldersgate-street, judged to be one of the biggest women in England.—January, 1762.

A FAT young black, about eighteen years of age, with a scar in his cheek, a little bow legg'd, he wants a toe in his left foot, with a grey livery, lined with green searge, a green pair of stockings, and a grey hat. Whoever gives notice of him, at the Grey-hound, in Gracechurch-street, shall be rewarded for their pains.—August, 1680.

YESTERDAY, December 13, a woman stood on the pillory at the end of Catherine-street, for keeping a disorderly house in that neighbourhood.—1759.

THERE is a report that three Suns were lately seen about Richmond in Surrey, by divers credible persons, of which different observations are made according to the fancy of the people.

IT is reported that a Quaker fell in love with a lady of very great quality, and hath extraordinarily petitioned to obtain her for his wife.

STOLEN, the 29th of September, out of Mr. Fletcher's backhouse in the Strand, five small Pictures of about a foot and a-half square, viz., one by Mr. Philip Thoverman, being a robbery, with a pybal-horse, and a man dragging along murdered, with others. Another of Mr. Eyckhout, with four figures, whereof two are playing at cards. One of Mr. Vanderneers, being a Moonshine. And two of Mr. John Wyckes, being two seasons of the year, autumn and midsummer; all in carved gilded frames. Whoever shall bring news of them to the said Mr. William Fletcher, shall be rewarded for their pains.—1679.

WHEREAS the Proprietors of the Royal Bagno, are sensible that their servants who attend gentlemen, both Rubbers and Barbers, have been very troublesome, by demanding of gentlemen a reward for their attendance; this is to give notice, that the servants are under a certain salary to their own demands, and that 5s. 6d. is the whole charge; and that if any servant shall ask, or make any complaints that they are not sufficiently paid for their pains; upon any gentleman's notice thereof to the Clerk of the said Bagno, such servant shall forthwith be discharged. Servants shall attend from six in the morning until ten at night.—Oct. 1680.

THE Proprietors of the Royal Bagno, at the earnest request of several persons of quality, have thought fit to appoint that Saturday in every week be set apart for the accommodation of Women only; whereof all gentlemen and others are desired to take notice; forasmuch as no entertainment will be allowed them on that day.—Nov. 1680.

WHEREAS some time since, at the desire of several ladies and persons of quality, Saturday was allotted them to sweat and wash in the Royal Bagno (all gentlemen exclusive). Now, at their further desires, it is thought convenient by the Proprietors thereof, to add (for their Services) another day, which is Wednesday, commencing the 28 of this instant March. All persons being desirous to take notice thereof, and order their affairs accordingly.—1681.

ALL gentlemen and others whose Sirnames are Abraham, are desired to meet at the Pump in Wallbrook on Wednesday, the 14th day of November, the hours of meeting are from three till seven of the clock, where you will meet some of the same name, who are desirous to constitute a friendly meeting there. And so to continue on every 2d Wednesday in each month between the hours appointed.—1705.

SEVERAL journeymen bakers of this city having refused to bake on Sundays, licences have been granted to forty non-freemen, and many more will soon be allow'd the same privileges.—Feb., 1762.

THE gentleman who was so severely ridiculed for bad horsemanship, under the title of Johnny Gilpin, died a few days ago at Bath, and has left an unmarried daughter, with a fortune of £20,000.—Nov., 1790.

A JOURNEY OF DISCOVERY ALL ROUND OUR HOUSE.

SECOND JOURNEY.

THE TRAVELLERS FIND THAT THE INTEREST OF THE JOURNEY COMMENCES AT A POINT WHICH WAS NOT AT FIRST ANTICIPATED.

WHENEVER travellers are about to set out upon a journey, there are a number of unforeseen delays and impediments; and wants arise which have been completely overlooked. But when we resolved upon performing "A Journey Round Our House," we certainly did not expect to meet with the difficulties that presented themselves. Let not the reader, who is supposed to accompany us through our journey, be disheartened by this admission. Our perplexity at the starting arose, not out of the limits of our journey, but out of its vast extent; not because of the few roads open for us to travel, but on account of the diversity of the prospect, and the multiplicity of paths that lay before us, all inviting us to pursue them, and enticing us by the beautiful truths which clustered around them, like flowers embellishing the path-way of the pioneer.

We knew not where to begin. The prospect, which at first seemed simple and circumscribed, widened before us at every fresh glance. Our House at once became a Paradise—an Eden bright with flowers. The fruit of science and of knowledge clustered around every object upon which we cast our eyes. So that our imagination was for some time bewildered, and we knew not which way to turn.

Let us illustrate our difficulty. Suppose we commenced with the fire that blazed cheerfully before us. We should at once have had to explore the deep mines of the earth, from which the identical pieces of coal then burning had not long been disembowelled. Our imagination would have been carried back to some thousands of centuries ago, when those very pieces, now throwing out their cheerful light and heat, were branches of stately vegetables, waving their luxuriant leaves in the wind; we should have to dwell for some time in solemn contemplation of those mighty, those wonderful, those terrible revolutions in nature, which folded the vast primeval forests in the bosom of the earth, until by the industry and skill of man they were disentombed, and applied to the promotion of his comfort. Wonderful to think that thousands of years before we breathed the breath of life, those leaves were grown, to die and be stored up through successive centuries, that they might warm and cheer us now! Yet, that they did so exist—that they have lain thus buried through thousands of years—are truths as palpable as that they are here now comforting us by the warmth they yield.

Still further: we should have to examine the changes now being undergone by the pieces of coal as they diminished perceptibly before our eyes. We should have to consider that the air, passing in rapid undulations towards the fire, yielded up one of its gases to unite with the substance of the coal, and that the two rejoicing in their new love, flew off like spirits released from the dead, to brighter worlds. We should have to follow these aerial creatures in their flight, and we should find them again among their old friends, giving beauty to the flower, verdure to the leaf, and strength and grandeur to the tree. Perhaps we might even trace those pieces of coal, until we found that some parts of them, in their new and gaseous form, uniting themselves to the substances of the vegetables that were growing in our garden, came back as grateful food upon our table!

You see, therefore, Reader and fellow Traveller, the "Journey Round our House" is a far more extensive journey than at first it seemed to be, and that the discoveries which we may make on our way, have never been exceeded in importance, even by those of Cook, Columbus, Linnæus, Cuvier, or Humboldt.

Well, we knew not from which point to start. Whether we looked upon the ceiling, the floor, or the walls of the room; whether we went outside, or remained inside of the building; whether we started from its roof, or its foundation; whether we commenced with the furniture of the house, or the house itself, the same multiplicity of objects, and of truths, crowded around us.

Whenever a traveller explores a newly discovered land, he puts down in his note-book the most minute particulars of the geographical features of the country; he describes its animals, its vegetables, its atmosphere, its waters, and above all its inhabitants. We must do the same in our "Journey Round our House:" the spider and the fly will supply an interesting chapter in the natural history of our Journey.

It was reflecting and reasoning thus, that ultimately determined the point from which we should start. A point "nearer home" than any of us at first anticipated. It was—to commence with OURSELVES, the inhabitants of the country we had set out to explore!

I had no sooner proposed this starting point to my fellow-travellers (my daughters, son, and wife) than they all seemed filled with delight at so good and appropriate a thought. I therefore brought down from my library all the physiological and anatomical works I possessed, and taking them as the charts by which we were to be guided, we fairly started upon our "Voyage of Discovery." It was agreed that the several travellers should explore for themselves such parts of the subject as they might feel most interest in, and that we would occasionally meet, like a band of pioneers beneath the shade of the cypress, to hold our councils, and communicate our discoveries. I will endeavour to collect those discoveries into something like order and connexion, and they may be regarded as the narrative of the first portion of our "Journey of Discovery."

Man's body is to his soul, in many respects, what a house is to its occupant. But how superior is the dwelling which God erected to that which man has built. Reader, come out of yourself for one moment, and in imagination realise the abstraction of the soul from the body. Make an effort of thought, and do not relinquish that effort until you fancy that you see your image seated on a chair by your side, or before you. And now proceed to ask your mental self certain questions respecting your bodily tenement—questions which, perchance, have never occurred to you before; but which will impress themselves the more forcibly upon you in proportion as you realise to yourself, for a moment, the idea of your soul examining the body which it inhabits.

There sits before you a form of exquisite proportions, with reference to the mode of life it has to pursue—the wants of the soul for which it has to care, and which it has to guard, under the direction of that soul, its owner and master. Its head is covered with hair, of which there are many thousands, perhaps some millions. Well, what do you think of a hair? Have you ever examined one? Each of those hairs is curiously constructed, and organised. If you take a branch of a tree, and cut it across, you will find curious markings called the grain of the wood, indicating its wonderful formation; for this grain is caused by vessels of various structure, all necessary to the existence of the plant. In the centre will be found either a hollow tube, or a space occupied by a soft substance called pith. Each hair of your head is as curiously formed as the branch of a tree, and in a manner not dissimilar, though its parts are so minute that the unaided eye cannot discern them. Each hair has a root, just as a tree has, and through this root it receives its nourishment. As the vessels which feed a plant are always proportionate to the size of the plant itself, how wonderfully fine must be those vessels which form the roots of the hair, being in proportion to the size of the hair, which is in itself so small that the eye cannot see its structure! The hair is, in fact, an animal plant, growing upon the body in much the same manner as plants grow upon the surface of the earth. But how does this hair grow? Not by the simple addition of matter at its roots, pushing up and elongating its stem: the nourishment of the hair passes up through its whole length and is deposited upon its end, just as the nourishment of a tree is deposited upon its extreme branches. If you, after having your hair cut, were to examine its ends by the microscope, you would discover the abrupt termination left by the scissors. But allow the hair to grow, and then examine it, and you would discover that it had grown from its point, which, in comparison with its former state, is perfect and fine. The reason why the beard is so hard is, that the ends of the hair are continually being shaved off. The hair of the beard, if allowed to grow, would become almost as soft as the hair of the head.

But why is man's head thus covered with hair? For precisely the same reason that a house is thatched—to keep the inmates warm. We might add, also, to give beauty to the edifice. But as beauty is a conventional quality, and if men were without it they would consider themselves quite as handsome as they do now, we will not enlarge upon the argument. Our bald-headed friends, too, might have reason to complain of such an unfavourable hypothesis.

Let us take care that our discoveries are sound, and do not tend to error. The chief hair upon the human body is placed upon the head, which is the seat of the brain, and, next to the heart, the most vital part of the system. There are in the human body numerous organs, denominated glands. The brain is the chief of them; and it is found that in all parts where glands are laid, they are kept warm by one or two provisions—either a covering of hair, or a coating of fat. These glands—and specially the brain—are of deep imporance in the human economy.

It is true that hair is to be found in arts where there are no glands that an be supposed to receive warmth from it. But in these cases the hair fulfils other purposes which will be presently explained. It may, however, be regarded as a fact, that in all parts where there is a thick covering of hair, there are glands which derive warmth and protection from it.

Besides the warmth afforded to the brain by the hair, it is perfectly encased in a tenement of bone. The brain is the great organ upon which the health, the welfare, the happiness of the system depends. The skull, therefore, may be regarded as analogous to the "strong box," the iron chest, in which the merchant keeps his treasure. There is no point at which the brain can be touched to its injury, without first doing violence to the skull. Even the spinal cord, which may be regarded as a prolongation of the brain, runs down the back through a tunnel or tube formed in a number of strong bones, so closely and firmly joined together, that they are commonly termed "the back bone."

Look at the eyebrows. What purpose do they fulfil? Precisely that of a shed, or arch placed over a window, to shelter it from rain. But for the eyebrows, the perspiration would frequently run from the brow into the eyes, and obscure the sight; a man walking in a shower of rain would scarcely be able to see; and a mariner in a storm would find a double difficulty in braving the tempest, but for this simple provision.

Now we come to the eye, which is the window of the soul's abode. And what a window! how curiously constructed, how wisely guarded! We do not intend in the course of these discoveries to encumber our subject by the use of the technical phraseology of scientific men. We contemplate the objects themselves, and describe them by the inspiration which they afford us. In the eyelashes, as well as the eyebrows, we see the hair fulfilling a useful purpose differing from those already described. The eyelashes serve to keep cold winds, dust, and too bright sun, from injuring or entering the windows of the body. When we walk against the east wind, we bring the tips of our eyelashes together, and in that way exclude the cold air from the surface of the eye; and in the same manner we exclude the dust and modify the light. The eyelashes, therefore, are like so many sentries, constantly moving to and fro, protecting a most important organ, and one that affords us great delight from injury. The eyelids are the shutters by which the windows are opened and closed. But they also cleanse the eye, keeping it bright and moist. There are, moreover, at the sides of each eye or window, little glands, or springs, by which a clear fluid is formed and supplied for cleansing the eye. The eye is placed in a socket of the skull, in which it has free motion, turning right or left, up or down, to serve the purpose of the inhabitant of the dwelling. Of the structure of the eye itself we will not say much, for that alone would form a subject for a volume. But we would have you examine the beautiful formation of tho iris of the eye, the ring which surrounds the pupil. Hold a light to it, and you will find that the iris will contract and diminish the pupil; withdraw the light and the iris will relax, and the pupil will expand, thus regulating the amount of light. The images of external objects are formed upon the retina of the eye, a thin membrane, spread out upon the extremity of a large nerve, which proceeds immediately to the brain, and forms the telegraphic cord by which information is immediately given to the mind, of everything visible going on within the range of sight. A landscape of many miles is portrayed upon a space smaller than a sixpence.

Now think, for a few moments, upon the wonderful structure of these windows of the body. Can you fancy, in the walls of your house, a window which protects itself, cleanses itself, and turns in any direction at the mere will of the tenant; and when that tenant is oppressed by excess of light, draws its own curtain, and gives him ease; and when he falls asleep, closes its own shutters and protects itself from the cold and dust of night, and the instant he awakes in the morning, opens, cleanses itself with a fluid which it has prepared during the night and kept in readiness; and repeats this routine of duty day after day for half a century, without requiring repair!

Such, nevertheless, is the wonderful structure of the window of the body—the Eye.

The next part of the system which presents itself for examination is the Nose. This organ is given us for two purposes: to enable us to respire and to smell. As odours generally arise from the surface of the earth, the cup or funnel of the nose is turned down to meet them. In the nostrils hair again serves a useful purpose. It not only warms the air which enters the nostrils, but it springs out from all sides, and forms an intersecting net, closing the nostrils against dust, and the intrusion of small insects. If by any means, as when taking a sharp sniff, foreign matters enter the nostrils, the nose is armed with a set of nerves which communicate the fact to certain muscles, and the organs of respiration unite with those muscles to expel the intruding substances. In this action, the diaphragm, or the muscle which divides the abdomen from the chest, is pressed down, the lungs are filled with air, the passage by which that air would otherwise escape through the mouth is closed up, and then, all at once, with considerable force, the air is pressed through the nostrils, to free them from the annoying substance. So great is the force with which this action takes place, that the passage into the mouth is generally pushed open, occasioning the person in whom the action takes place, to cry "'tsha!" and thus is formed what is termed a sneeze! As with the Eye, so with the Nose,—innumerable nerves are distributed over the lining membrane, and these nerves are connected with larger nerves passing to the brain, through which everything relating to the sense of smell is communicated.

The next part of the system is the mouth, which answers the fourfold purpose of the organ of taste, of sound, of mastication, and of breathing. For all of these operations, except in breathing, these various parts of the mouth are engaged. In eating we use the lips, the tongue, and the teeth. The teeth serve the purpose of grinding the food, the tongue turns it during the process of grinding, and delivers it up to the throat, for the purposes of the stomach, when sufficiently masticated. The lips serve to confine the food in the mouth, and assist in swallowing it, and there are glands underneath the tongue, and in the sides of the mouth, which pour in a fluid to moisten the food. And so watchful are these glands of their duty, that the mere imagination frequently causes them to act. Their fluid is required to modify the intensity of different flavours and condiments which man, in his love of eating, will indulge in. Thus, when we eat anything very acid, as a lemon, or anything very irritating, as Cayenne pepper, the effect thereof upon the sensitive nerves of the tongue is greatly modified by a free flow of saliva into the mouth. And if we merely fancy the taste of any such things, these glands are so watchful, that they will immediately pour out their fluid to mitigate the supposed effect.

In speaking, we use the lips, the teeth, the tongue; and the chest supplies air, which being controlled in its emission, causes the various sounds which we have arranged into speech, and by which, under certain laws, we are enabled to understand each other's wants, participate in each other's emotions, express our loves, our hopes, our fears, and glean those facts, the accumulation of which constitutes knowledge, enhances the happiness of man, and elevates him, in its ultimate results, above the lower creatures to which the blessing of speech is denied.

In tasting, the action is precisely similar to that of smelling. A certain effect is produced upon the nerves of taste, distributed over the tongue, and they communicate immediately with larger nerves proceeding to the brain, constituting the telegraphic cord by which all matters relating to taste are conveyed to the mind.

In hearing, the nerves are affected by the vibrations of the air, which are communicated to the tympanum of the ears, over which minute nerve-branches are thickly distributed. These are the filaments of the extremities of the auditory nerves, by which sounds, and the direction and sources from which they proceed, are communicated to the mind.

The organs, whose functions we have been describing, are called the organs of the senses. Through their agency, we are enabled to hear, see, feel, smell, and taste, and thus we preserve and enjoy our relations with the external world.

Now, in order to avoid falling into a merely anatomical or physiological description of the human body, let us bear in mind that we have set out upon a "journey of discovery," and that, therefore, instead of following in the beaten track of our predecessors, we are to explore for ourselves. Away, then, from the arbitrary paths of science into fresh fields of thought, and let us imagine that the soul that inhabits the tenement we have partly described, is attended by numerous servants, the duties of some of whom we have already explained.

That wonderful essence, the soul of man, rises above all finite knowledge. Its wonders and powers will never, probably, be understood until when, in a future state of existence, the grandest of all mysteries shall be explained. When we talk of the brain, we speak of that which it is easy to comprehend as the organ, or the seat of the mind; when we speak of the mind, we have greater difficulty in comprehending the meaning of the term we employ; but when we speak of the soul, we have reached a point which defies our understanding, because our knowledge is limited. The brain may be injured by a blow; the mind may be pained by a disagreeable sight, or offended by a harsh word; but the soul can only be influenced secondarily through the mind, which is primarily affected by the organ of the material senses. Thus the happiness or the misery of the soul depends upon the proper fulfilment of the duties of the senses, which are the servants of the soul, over which the mind presides, as the steward who mediates between the employer and the employed.

Such reflections as these, based as they evidently are upon truth, though somewhat new to mankind, lead us inevitably to exercise a due watchfulness over every action of our lives. The ear, which is taught to delight in sweet sounds, and in pure language, is a better servant of the Master Soul, than one which delights not in music, and which listens, with approbation or indifference, to the oaths of the profane. The eye which rejoices in the beauties of nature, and in scenes of domestic happiness and love, is a more faithful servant than one that delights in witnessing scenes of revelry dissipation, and strife. The nose which esteems the sweet odour of a flower, or the life-giving freshness of the pure air, is more dutiful to his master than one that rejects not the polluted atmosphere of neglected dwellings. The mouth which thirsts for morbid gratification of taste, is more worthless than one which is contented with wholesome viands, and ruled by the proper instincts of its duty.

The hourly, the momentary actions of these senses must necessarily affect the mind, which is the head steward of the soul; and the soul becomes rich in goodness, or poor in sin, in proportion as the stewardship, held by his many servants, is rightly or wrongfully fulfilled. This, if we mistake not, is a clear and a truthful exposition of the relation between the material and the immaterial world—the body and the spirit—and is free from objections which have been offered to other theories.

We shall therefore speak of the Soul as the inhabitant of the tenement we have further to describe; and shall, in all respects, regard this high and immortal spirit as the Master of the Mind.

Admitting, however, this exception—that, as in an establishment where the servants are not properly directed and ruled, they often gain the ascendancy, and the master has no power over them: this is precisely the case with man, when he gives himself up to sensual indulgences. The soul becomes the slave of the senses—the master is controlled by the servants.

Let us recall to the mind of our fellow-traveller, that he is supposed, by an effort of imagination, to have come out from within his bodily tenement; and that he is now engaged in a minute examination of his bodily structure. There remain many and most curious parts and works yet to be examined. But before we proceed to the inspection and description of the internal chambers, we will call attention to the fact that this tenement is so constructed that it can be moved at will. How wonderful is the mechanism by which the motions of the body are accomplished! In the steam-engine, the force of steam, bursting its way through valves, and rushing into chambers and throwing up the piston, motion is procured. The steam enters with a force varying in proportion to the construction of the engine, and the uses to which it is applied. But, nevertheless, a force so great, that it will frequently rend wrought-iron as if it were as frail as a sheet of paper; in clocks the motive power is supplied by pulleys and weights; and in watches and minor mechanical contrivances, by springs, which, being wound closely together, have a tendency to expand themselves, and by this tendency, set the wheels and levers in motion. But the body is put in motion by a thought; by a simple emotion or desire! For a few moments devote yourself, fellow-traveller, to a few discoveries which, though apparently simple, are among the most astounding and delightful facts that you can glean from any source. Nineveh's wonders are stale and flat compared to these. The Pyramids of Egypt may be forgotten. The alchemist's search after the philosopher's stone becomes comparatively a mere pastime.

Lay your arm and hand down upon the table, let the palm of the hand be upwards. Open your hand, then close it quickly—what caused it to close? The thought to close your hand had scarcely passed your mind, when, lo! the act was accomplished. Open your hand again—place the thumb upon the palm. Return the thumb to its place, then elevate the first finger, then the second, then the third. Your will is instantly answered in each instance. Why is it so? How is it that when you wished to raise one finger only, the whole hand did not close? Or that when you desired the thumb to lie upon the palm of the hand, a finger did not drop in the place instead? How was it that when you wished to raise the second finger, the mandate went from the mind unto that finger, and not to any other? How is it that the mere thought—the mere effort of the will—caused the machinery of the arm and hand to act—and to act with so much exactness?

Here, fellow-traveller, are materials for thought and discovery, which may well employ your leisure hours. Depend upon it, that until you have examined such wonderful though familiar things as have here been presented to your observation — examined them minutely and earnestly—you have left the best philosophy untouched, and have failed to explore the most beautiful region which God has granted unto us for the furtherance of knowledge and the promotion of our soul's welfare.

Try another experiment. Place before you a book—say the *Journey*. Place it among other books, and desire to select it from among the rest, for the purpose of perusal. The moment you desire to read it, your arm is outstretched and the hand takes hold of the right work. The arm stretches neither too far nor not far enough, but it reaches exactly to the spot where the book lies. It takes up the book—the one you desire—and leaves the many others behind. You turn over the leaves—you reach the page whereon is written, "A Journey of Discovery all Round Our House;" and now the very thoughts which are passing through my mind begin to flow through yours. That little book has lain for days and nights unopened, unobserved. I am a stranger to you. We reside apart. We may never know each other. Yet my thoughts enter your mind, and are presented to your soul, and your soul is elevated or depressed in tone, becomes better or worse for having had the thoughts of my own soul laid before it. How wonderful is this, and how important that we should endeavour to drink from the fountains of truth only! Since the time when I penned these thoughts, others may have engaged my attention; and the moment that may find your mind busily collecting the principles and facts here set down, may find me deeply absorbed in some other theme, wrapped in the sleep of nature, or sunk into the abyss of death!

How can we explain the action that takes place in the hand and arm as before described? All we know about it may be thus communicated. The arm is made up of a series of bones, muscles, and nerves. There are also blood-vessels, and cartilages, and tendons. But they do not call for specific notice in describing the actions which take place. The term muscles may be held to include the cartilages and tendons which are attached to them; and the blood-vessels will receive specific mention when we speak of the circulation of the blood.

Now the office of the bones and the muscles is simply mechanical. By their structure and relative dispositions, the motions we desire are effected. But what is it that sets these bones and muscles in motion? The mind, whose seat of government is the brain, communicates your desire to numerous nerves which pass along the arm and reach the extremities of the fingers. These nerves are as fine as hairs, and are abundantly distributed. Now, in effect, these nerves say to the parts with which they communicate, that your desire is to open or to close your hand, to raise your first, second, or third finger. But to what or to which organs do the nerves communicate your desire, and how does the response take place? Do these nerves communicate with the muscles, or the bones, or irritate and excite them to action? No. There are two sets of nerves; and this is a most interesting, and also a well-ascertained fact. The nerves of volition are not those of motion. There is one set of nerves which convey the desire of the will, and another set which, receiving the instructions, cause them to be executed. The muscles and the bones are under the command of the nerves of motion. The one nervous system communicates with the other nervous system, and then the action or desire is fulfilled. This is wonderful—most wonderful! But it is God's work and, therefore, possible. In this way all our voluntary motions are performed. But let us look further into this interesting subject. We shall find that many of the servants of the soul have been engaged in the fulfilment of the simple duty we have been pointing out. You desired to close your hand. The mind sent forth that desire through the nerves, which are the messengers over that part of the system. The nerves, which are the messengers, communicated the desire to those nerves which are the officers of motion; these latter caused the muscles to act upon the bones in such a manner as to close the hand, which was the act you desired.

But that is not all. There was a watchful servant, the eye, which, immediately it saw the act fulfilled, reported to the mind that it had been done. And even the nerves of volition, which had conveyed your desire outward from the mind, returned through another department, the nerves of touch, the intelligence that the desire had been fulfilled. A moment's reflection will serve to show that all these actions must have taken place. If you had been blind, and could not see, and if your hand had, from some accident, lost the sense of feeling, you could not have known when to have ceased the effort to close the hand. But you saw and felt that the hand was closed, and you instantly opened it again. Now as this action took place in one of the extremeties of the body, the intelligence by feeling and by sight must have passed inward from the hand and eye to the brain, just as in the first instance the desire was passed outward from the brain to the hand.

Let us take the case of a man who is walking a crowded thoroughfare, and we shall see how wonderfully active are all the servants of the soul, under the direction of the mind. He walks along in a given direction. But for the act of volition in the mind not a muscle would stir. The eye is watching his footsteps. There is a stone in his path, the eye informs the mind, the mind communicates with the brain and the nerves, the nerves lift the foot a little higher, or turn it on one side, and the stone is avoided. The eye alights upon a familiar face, and the mind reminds him that he has seen that face before. He goes on thinking of the circumstance under which he saw that person, and partially forgets his walk, and the direction of his steps. But the nerves of volition and motion unite to keep the muscles up to their work, and the man walks on without having occasion to think continually, "I must keep walking." He has not to make an effort to lift his legs along, between each interval of meditation. He walks and meditates the while: Presently a danger approaches him from behind. The eye sees it not—knows no more, in fact, than if it were dead. But the ear sounds the alarm, tells the man, by the rumbling of a wheel, and the tramp of horses' feet, that he is in danger; and then the nerves, putting forward their utmost strength, whip the muscles up to the quick performance of their duty; the man steps out of the way of danger; and he is saved. He draws near to a sewer, which is vomiting forth its poisonous exhalations. The eye is again unconscious—it cannot see the poison lurking in the air. The ear, too, is helpless; it cannot bear witness to the presence of an enemy to life. But the nose detects the noxious agent, and then the eye points out the direction of the sewer, and guides his footsteps to a path wherein he may escape the injurious consequences. The clock strikes, and the ear informs him that it is the hour of an appointment. The nerves stimulate the muscles again, and he is hastened onward. He does not know the residence of his friend, but his tongue asks for him, and his ear makes known the reply. He reaches the spot—sits—rests. The action of the muscles is stayed; the nerves are for a time at rest. The blood which had flowed freely to feed the muscles while they were working, goes more steadily through the veins and arteries, and the lungs, which had been purifying the blood in its course, partake of the partial rest. Such, is the action of life—such the care which God has taken of us—such the beauty of his works. Another "Journey" will enable us to look into other wonders connected with ourselves.

VITAL STATISTICS.

It has been computed, that in France, out of a number of individuals born the same year, one-sixth die the first year, one-fifth the second, one-third the fourteenth year, one-half at the end of 42 years, three-quarters at the end of 69 years, four-fifths after 72 years, and five-sixths after 75 years. In the last century, French statisticians found that 44 individuals per cent. reach the age of 30; 23 per cent. reach 60; 15 per cent. 70; 4·72 per cent. 80; and 4·73 per cent. reach 90. At the present time, it seems that the mean duration of human life is 39 years and 8 months; 26 years ago it was only 36 years, according to some, and so little as 33, according to others. In 1817, the mean duration of life was only 31 years and 3 months; at the end of the 18th century it was 28 years and 9 months; in the 17th century 26 years; and only 17 years in the 14th century. In Geneva, the mean duration of human life was 18 years and 5 months in the 16th century; 23 years and 4 months in the 17th century; 33 years in the 18th; and has risen to 38 years and 10 months between 1615 and 1826. In 1840, the mean duration of life was, in England, above 38 years; in France, 36½; in Hanover, 35 years and 4 months; in Holstein, 34 years and 7 months; in Holland, 34 years; in the Duchy of Baden, 32 years and 9 months; at Naples, 31 years and 7 months; in Prussia, 30 years and 8 months; in Wirtemberg, 30 years; and in Saxony, 29 years. It will be perceived that the mean duration of life is gradually increasing in Europe, and especially in France.

Worldly joy is a sunflower, which shuts when the gleam of prosperity is over: spiritual joy is an evergreen—an unfading plant.

THE MILITARY EXECUTION.*

His doom has been decreed,
He has owned the fatal deed,
And its sentence is here to abide
No mercy now can save;
They have dug the yawning grave,
And the hapless and the brave
Kneels beside.

No bandage wraps his eye,
He is kneeling there to die
Unblinded, undaunted, alone.
His latest prayer has ceased,
And the comrade and the priest
From their last sad task released,
Both are gone.

His kindred are not near
The fatal knell to hear,
They can but weep the deed when 'tis done;
They would shriek, and wail, and pray:
It is well for him to-day
That his friends are far away—
All but one.

Yes, in his mute despair,
The faithful hound is there,
He has reached his master's side with a spring.
To the hand which reared and fed,
Till its ebbing pulse has fled,
Till that hand is cold and dead,
He will cling.

What art, or lure, or wile
That one can now beguile
From the side of his master and friend?
He has gnawed his cord in twain;
To the arm which strives in vain
To repel him, he will strain,
To the end.

The tear-drop who can blame?
Though it dim the veteran's aim
And each breast along the line heave the sigh.
But 'twere cruel now to save;
And together in that grave,
The faithful and the brave,
Let them lie.

D[illegible]USBY, whose figure was much under the common size, was one day accosted in a coffee-room by an Irish baronet of colossal height, "May I pass to my seat, O giant?" when the Doctor, politely making way, replied, "Yes, O pigmy." "Oh, sir," said the baronet, "my expression referred to the *size* of your intellect." "And *mine* to the *size* of yours," replied the Doctor.

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* From *The Pilgrimage and other Poems*, by the Earl of Ellesmere.

A PRELATE'S DINNER.

The following extract is taken from a Black-letter work, entitled "Certaine Secrete Wonders of Nature — containing a descriptio of sundry strange things, seming mónstrous in our eyes and iudgment, because we are not priuie to the reasons of them. Gathered out of diuers learned authors, as well *Greeke* as *Latine*, sacred as prophane. By E. Fenton. Apres fortune espoir. Imprinted at London by Henry Binnemen, dwelling in Knightrider-streat, at the signe of the Mermaid. Anno 1569."

After giving an account of Cleopatra dissolving a large pearl, at the banquet she gave to Antony, the chapter thus proceeds:—

"And yet was this prodigalitie little or nothing in respect of the magnificall pompe which the Emperor Gaeta vsed in his publike banquettes: for he caused himself to be served at the borde with diversite of meates, as fish and fleshe, in the order of the Alphabet, for all foule and fishe that he could recouer that began with A, he caused to be set on his table as a firste seruice, as Austriges and suche others, practising the like in the seconde course with B, as Bustarde, Bitter, and suche lyke, the same not fayling to come immediately after ye first seruice was taken awaye; and so consequently eury letter was honored with a seruice till the whole Alphabet was performed, hauing in deede Cookes and Cators appointed for that purpose only.

"But what stande we so longe in the searche of foraine prodigalities in banquettes, seeing (amongst a number of others) our time hath stirred up a monstrous example that waye, in *[illegible]gnon*, at such time as mine author studied the laws under *Emilius Farreus. Emilius Farretus*, in whose time there was a Prelate straunger, whose name I will concele, as well for the honour of his profession as to muche superstition in himselfe, who one day inuited to a banquette the nobilitie of Auignon, as well men as women, where, for firste beginninge of his pompe, at the very entrie into the halle where the banquette was appointed, laye spread vpon a curious borde a greate beefe with his heade pulled of, and purged in his intrailes, having in his bellie a whole harte or deare of the like dressing, stufte full of little birdes, as Quailes, Partriches, Larkes, Feasants, and other lyke, the same being so cvnningly inclosed in the bellie of the seconde beaste, and they so artificially conioned ye one within the other, that it seemed some excellent Mathematician had bene the workeman thereof.

"But that whiche made the matter both straunge and wonderfull was that all the birdes so assembled did roste and turne all alone vpon a broche by certaine compasse and conduites withoute the ayde of any men: For the firste course and order of the table, his gestes were presented with store of curious pastrie, wherein were wrought and inclosed manye little birdes quicke, who, assone as they cruste was taken of, began to flie about the hall: there were besides sundrie sortes of siluer plate, full of jellie so subtillie conueighed, that a man might have seenin the bottome a number of little fishes quicke, swimming and leaping in sweete water and muske, to the greate delite and pleasure of the assistaunts: neither is it lesse straunge that all the foules which were serued upon the table were larded with Lampraye, albeit it was in a season when they coste halfe a crowne a piece: but that which seales up the superstitious pompe of this proude Prelate, was, that there was reserued as many quicke birdes, as he was serued with dead foules, at his table, the same contayning suche indifferent number that if there were a Feasant sent dressed to the borde, there were genltemen (appointed for the purpose) which presented another aliuve, and al to showe the magnificence of the Prieste, to whom what remains for the consummation of his prodigall delites, but that the Gentlemen which serued him had their faces covered with a vaile leaste their breathe should offende either him or his meate."

HOW TO MAKE A GOOD FIRE.

In our first *Journey* we gave several hints upon the management of domestic fires; and we have been pleased to find that since then the "first hint" has been confirmed by an article which has appeared severally in the *Builder*, the *Lancet*, and the *Times*. The *Lancet* makes the following remarks upon the subject. We beg to call attention, however, to the fact, that we have found the iron plate, recommended in "hint first," page 6, superior to the piece of paper recommended below. The *iron* lasts indefinitely, but the *paper* requires to be renewed daily:—

"The subject of coal-fires is so closely connected with the ventilation, warming, and other sanitary arrangements of our dwellings, that it falls strictly within our province to invite the attention of our readers to a new mode, that has been recently noticed in the newspapers, of making a fire in an ordinary grate.

"It is a proverb, that there is one thing which everybody thinks he can do better than anybody else — that is, to poke and make a fire. It sounds rather oddly to be told that, although coals have been used as fuel since the days of our great grandfathers and great grandmothers, the proper way of using coals economically, and of making a good fire, has only just been discovered. It is probable, however, that we are only now entering upon a course of rational improvement in this matter. Many persons have no doubt seen, within the last few days, in the *Times*, a paragraph, taken from the *Builder*, describing the following mode of making a fire: The first step, as in all thorough reforms, is to make a clean sweep. Clean out the grate; lay a piece of paper, cut to the form and size of the lower part of the grate, at the bottom; pile up *fresh* coal as high as the level of the top bar,—it is better that the pieces should be about the size of stones used for macadamising roads, and the larger lumps should be laid in front,—then dispose paper or shavings and sticks on the top, and cover with half-burnt cinders and coal. The fuel is laid. It is to be lighted *at the top!* Housemaids may stand aghast and incredulous; but the results are both astonishing and satisfactory. If these simple instructions be well carried out, the fire lights up at once, without further trouble. The centre of the fuel soon catches, and the inferior strata of coal get ignited. The fire burns downwards, and the smoke is forced to traverse the upper layers of burning coal; the consequence is, perfect combustion. A fire so made will go on burning for six, eight, or even ten hours, without poking, without adding fresh coal, or any interference whatever. There is little or no smoke, and scarcely any ashes; the fire gives out a pleasant and uniform glow. We have put this matter to the test of experiment, and feel well satisfied that we are rendering a service to our readers by earnestly recommending them to try the plan forthwith. The members of our profession are so closely associated with all classes of the community, that they will at once make this improvement known to the whole of the public.

"Several pages of our journal might be occupied by dwelling on the many beneficial consequences that would attend the universal adoption of this system. It may be enough to point out a few. The saving of coal is immense. The avoidance of smoke is not only an immediate comfort to the inmates of each house, but the aggregate result in London would be a material abatement of a growing nuisance—the increased impurity of the air of the metropolis. Poking the fire, shovelling up cinders, throwing in coal, and replenishing coal-scuttles, are annoyances that most persons have too often experienced. A fire made on the plan recommended will burn the whole night without touching and without watching. The fire in Dr. Arnott's stove is made on a similar principle. The same end is to a great extent accomplished. It has the advantage of being applicable to the stoves in common use. It is therefore a boon of which every one may partake. The discoverer is entitled to the thanks of the community."

CURIOUS EPITAPHS.

A BOOK entitled "*A Collection of Curious, Interesting, and Facetious Epitaphs, 'Monumental Inscriptions,*" &c., by Joseph Simpson, has just appeared. The following are a few specimens of the absurd inscriptions by which the tablets commemorative of the dead are sullied:—

ON A LINENDRAPER.

Cottons and cambrics, all adieu,
And muslins, too, farewell;
Plain, striped, and figured, old and new,
Three quarters, yard, or ell;
By nail and yard I've measured ye,
As customers inclined;
The churchyard now has measured me,
And nails my coffin bind.

FROM GUNWALLOW CHURCHYARD, CORNWALL.

(It may be read either backward or forwards.)

Shall we all die?
We shall die all.
All die shall we—
Die all we shall.

FROM THETFORD CHURCHYARD.

My grandfather was buried here,
My cousin Jane, and two uncles dear;
My father perished with an inflammation in the thighs,
And my sister dropped down dead in the Minories!
But the reason why I'm here interred, according to my thinking,
Is owing to my good living and hard drinking.
If, therefore, good Christians, you wish to live long,
Don't drink too much wine, brandy, gin, or anything strong.

FROM BRECON CHURCHYARD.

God be praised!
Here is Mr. Dudley, senior,
And Jane, his wife, also,
Who, whilst living, was his superior;
But see what death can do.
Two of his sons also lie here,
One Walter, t'other Joe;
They all of them went in the year 1510 below.

We have ourselves collected many curious epitaphs in our time. The following is upon our memory:—

'Tis my request,
My bones may rest
Within this chest,
Without molest.

We are glad to mark an improvement in the general character of inscriptions upon tombs. It was high time that such gross absurdity should cease to mock the solemnity of death.

An Irish journal says the following bill was presented by a farrier:—"To curing your pony that died yesterday, £1 1s."

A GENTLEMAN dining with a parsimonious man, was requested to take a second glass of Cape wine at dinner. "No, thank you," said he, "I never *double the Cape.*"

A HUMOURIST remarking upon the dispute pending between the teetotallers and the "jolly full" bottlers of a borough, termed it the "War of the Red and White *Noses.*"

AT a ford in North Notts, near Ollerton, is a board with the following inscription:—"Take notice, when this board is under water, the river is impassable."

A WESTERN orator, in a late swang wang address to the unterrified voters of Cornopolis, said that to save his country, a patriot should be willing to die, even if it cost him his life. It is unnecessary to say that "them" sentiments met with a "triumphant echo" from the assembled multitude.

ALEXANDER GUN, an Inland Revenue officer in Scotland, being dismissed from his employment for misconduct, an entry was made in a book kept for the purpose, as follows:—"A Gun *discharged* for making a false report."

A WITNESS in the Court of Common Pleas lately gave her name as "Elizabeth Martha Selina Georgina Augusta Cuham Burrows." This, she said, was "her Christendom name," but she did not in general "write it in full."

A YOUNG widow was asked why she was going to take another husband so soon after the death of the first. "O, la!" said she, "I do it to prevent fretting myself to death on account of dear Tom."

As proof of the fact that girls are useful articles, and that the world could not very well get along without them, a late writer states it as a fact, that if all the girls were driven out of the world in one generation, the boys would all go out after them.

A MAN very much intoxicated was sent to prison. "Why don't you bail him out?" inquired a bystander. "Bail him out!" exclaimed the other, "you couldn't *pump* him out!"

MILTON, when blind, married a shrew. The Duke of Buckingham called her a rose. "I am no judge of colours," replied Milton, "but I dare say you are right, for I feel the thorns daily."

DIBDIN had a horse which he called *Graphy.* "Very odd name!" said Oxenbury. "Not at all," responded Tom; "when I bought him, it was *Buy-a-Graphy;* when I mount him, it's *Top-o-Graphy;* and when I want him to go, it's *Gee-ho-Graphy.*"

GARDENING FOR MARCH.*

Stove and Greenhouse.—Put cuttings and seedlings of the tender and choice annuals sown last month into thumb-pots from which they are to be shifted at a more advanced stage, and shift all plants that require repotting (leaving the most forward to the end of this or until the succeeding month), and make cuttings of Hydrangias and Fuchsias, and keep up a moist temperature of about 70 degrees for a few days, until the repotted plants acquire new roots in the fresh mould, and the cuttings strike theirs in a mild bottom heat. For almost all the plants the mould may be composed of rich maiden earth (rotten turf preferable to any other), leaf mould and sand in about equal proportions; and for the lower stratum in the pots charcoal is excellent, for it acts as a drain below, and if a charred stick be placed vertically in a pot, it becomes a conductor of moisture to the roots of the plant, which, without some such management, are so frequently in dry earth. Ground bones mixed with the charcoal have a permanently good effect. The depth of these porous substances should be a third of the whole filling for very delicate plants, such as heaths, and indeed for cuttings of almost all house plants.

The temperature of the greenhouse should be much lower, though not below 40 degrees during any part of the month, and fires will be unnecessary as the month advances. The flowering plants should not be crowded or left unventilated, but the more or less frequent admission of fresh air will depend very much on the size of the house and the number of plants; in a small and full house the necessity for admitting fresh air will be more urgent than under opposite circumstances. Plants that have ceased flowering should be removed from the greenhouse to the conservatory or garden frames, to make way for others about to blow.

Mr. Barnes, gardener to Lady Rolle, in Devonshire, has been in the habit of using fragments of charcoal of different sizes with unsifted fibry soil and pebbles, in pot culture of every description for upwards of twenty years, and with the most beneficial effects. He was led to use it from seeing the luxuriance of grass and weeds in a wood where the charcoal dust had got among them. He tried it first with cucumbers, and then with other soft growing plants, and most kitchen garden plants in drills. Whether the mould should be unsifted and therefore rough, or fine, should depend, however, on the nature of the plants for which it is intended. The editor of the *Gardener's Chronicle* lays down as a rule, that soft-wooded plants, such as Fuchsias and some of the Clerodendrons, should be quite fine (he assumes that they are to be first put into small pots and to be shifted into larger), in order to let the roots occupy every particle of it in a few months. The compost for permanent woody plants, on the contrary, should be very rough.

Observe the directions for the preceding month respecting Auriculas. If they be under frames, open the sashes every fine day, keep them warm at night, water very moderately until they have opened their flowers, when even a soft shower would be injurious to them, and shade them from much light to prevent their trusses from being drawn: those (of a choice kind) which produce two hearts should be deprived of the weaker, and no buds except those in the centre should be left: a very brilliant sun injures Polyanthuses in blow by blanching the edges of the flower—protect them also.

Fine Carnations that have been under frames should be put into nine or ten-inch pots, or, if their roots be not much matted, into smaller ones, from which they should be afterwards shifted; when potting them, take care that no wire worm slips through your fingers in the compost, every particle of which ought to be narrowly examined; press the balls round their roots gently, so as to fix them firmly in the pots.

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* These excellent and familiar instructions in gardening are chiefly derived from Houlston and Wright's "Gardener," published at 1s. 6d., a work which, in addition to the monthly directions, contains instructions in the general principles of gardening that will prove invaluable.

Continue to force fruits, choice vegetables and roses, &c.

Frames.—In the early melon pit, the flowers may now require to be impregnated: the plants put out last month ought to be well rooted the middle of this month; draw earth to the roots if they require it.

Give the same care to cucumbers as to ventilation, watering, and lining, and make fresh beds for later crops.—Protect all your potted plants and cuttings in frames, and give air to them when you can.

Sow seeds of Dahlias; prick out two inches apart those that were sown last month, pot rooted cuttings of them under frames, and lay the tubers that are to be planted out next month into hotbeds to make them push.

Flower Garden.—Guard Tulips and Ranunculuses from heavy rains and frost; the latter swell after much rain, and frost succeeding injures them extremely. A top dressing of rotten compost at the commencement of the month will be serviceable to Pansies. Fork and dress all flower-beds and borders, taking care not to loosen the roots of the plants, and scatter lime, salt, or soot, to destroy snails and grubs, which will however be more effectively destroyed by the activity of a sea gull with clipped wings, which may be encouraged to roam about the garden at pleasure.

Transplant annuals and biennials sown last autumn.

Kitchen Garden.—Seakale is now abundant for the table, by merely taking the trouble of blanching the shoots, and covering the crowns with sifted coal ashes, sand, peat, mould, or tan; fresh sowings or plantations of it will, however, be always necessary at this season, to keep up successions of plants, if they be wanted for forcing in the early part of the winter; if yearling plants are used instead of seed (which is, however, more certain of success, the best plants being those which grow without removal from the places where the seed was dropped), a year is gained: for the same purpose, roots of rhubarb may now be parted, and put into fresh plantations. Asparagus and Elford's scarlet stalked rhubarb (the former much more so), if wanted for the table early, must be forced by a heavy covering of fermenting litter over the beds, or by digging trenches between them as wide as the breadth of the alleys will allow, two and a half or three feet deep, and filling them up with litter, of which some should also be laid on hoops over the beds. When you have obtained and cut the crop, remove the litter from the trenches, and fill them with rich mould, into which the fibres of the asparagus may strike freely. The disadvantage of forcing asparagus severely is, that it will not bear a repetition of the same treatment for three years—a serious matter with a vegetable which cannot bear forcing at all until it is four years' old, double the age sufficient for seakale and rhubarb raised from seed.

A rich, deep, and sandy loam is the most suitable for those three valuable plants, and if the soil be naturally different, it must be rendered appropriate, as nearly as possible, for asparagus, by combination with sea sand, loam, decomposed turf, and a large quantity of the richest manure, such as that from a slaughter-house. Seakale does not demand so much depth of rank soil as asparagus, or rhubard, which is taprooted. Sea-weed is an admirable *condiment* in their food; the method of propagating them all is almost the same. After deep trenching and blending of the manuring substances with the bottom layer of mould, and throughout the whole of it, form the ground (for asparagus) into beds four feet wide, with alleys of two feet intervening, and to prevent any future irregularities in dressing the beds and digging the alleys, fix short stout stakes permanently at every corner of each bed, so that by stretching the line from end to end during those operations, the beds may be kept at their original breadth: mark two drills nine inches from the edges of the beds, and one in the centre fifteen inches from those outer ones; drop the seed in patches (to be thinned afterwards), and cover it with an inch of earth. You may take a crop of onions and radishes (very thinly sown broadcast) the *first* year. The distances for seakale and rhubarb between the drills should be two feet, and if the seed have been dropped irregularly in the drill, the plants must be thinned out to two or two feet and a half apart. Economy of seed, however, demands that it should be dropped only where actually required. "The third spring, several stalks may be gathered from each plant, and the fourth spring the plantation will be in full bearing. Excepting in the first spring after sowing, no spring dressing is required till May, after the crop has been gathered. The London market gardeners plant the seakale in rows from four to six feet apart, and every autumn, after the leaves have died down to the surface, they dig a trench between the rows, and cover the plants with soil to the depth of a foot. As the crop is gathered, the ridges so formed are levelled down, and a crop planted between. By this mode, the whole produce of the plant is gathered at once, every part of it being completely blanched and tender."

Make plantations of artichokes, which will grow very well in a stiff soil properly managed, though a rich friable loam will be far better for them, as for all productions generally. Trench, or at least dig the ground deeply; then stretch your line, open holes fifteen inches in diameter, and twelve inches deep, three feet apart; put two well-rooted offsets into each hole, with the tops above ground, and manure round the roots; then draw the line for the next row four feet distant from the first, and proceed as before, digging good manure into the intervals. Plants put down early this month will produce some heads at the end of autumn. Dress the established plantations, levelling the trenches, removing superfluous stools and blending the litter, which had been protecting the plants, with the soil.

Jerusalem artichokes, once planted, will take care of themselves; like potatoes, they have a disposition to renew their growth from the tubers left in the ground during the winter; the best way of propagating them, however, is by planting sets of the tuber in well-manured drills, exactly as potatoes are cultivated; any soil is good enough for them, though that which is light and sandy is the best. Once established, it is not easy to get rid of them, as any fractional part of a tuber that has an eye will grow.

Do not lose a season for any of your kitchen garden seeds, most of the common sorts of which may, however, be now sown in sheltered borders, if the ground be in a good state. Turnips and radishes will require a warm bed, and though French beans may be sown against a south wall, their success is doubtful if they be put down before the end of the month at soonest. Do not omit sowing the seeds of Brussels sprouts, as well as that of the savoy, borecole, and successions of peas and beans. When you have levelled the ribbed and winter-manured ground for carrots and parsnips, sow both crops in sufficiently wide drills, leaving a greater breadth, however, before those of the latter than of the former—say sixteen inches—and thin the plants to eight inches asunder: stake peas, plant and earth up cabbages, transplant cauliflowers and lettuces, and put down cuttings of pot herbs, and offsets of chives; pick up and re-make gravel, and mow turf walks; dig and rake borders. The planting of fruit-trees may be proceeded with, but the details are not given until the operations of October or November are considered, which are better months for the purpose. Mulch the valuable kinds, especially if newly planted, to keep out drought. The planting of evergreens had better be postponed till next month: if you *do* plant or transplant, stake them well, or the wind will shake them severely. Peg down roses, and finish the pruning of them; lay some, and take off suckers; slip and part roots of various plants. Dig the ground in the nursery between the rows:

prick out seedlings, and plant cuttings and slips, and put down acorns, kernels, and berries of various kinds, in beds of well-prepared earth.

Fruit Garden.—Protect the blossoms of Peaches, &c., in the open garden from frost, and sharp winds, and lay manure over their roots if you have not done so before.

The pruning of fruit-trees ought to have been finished at or before the commencement of this month.

The important operations of grafting are to be proceeded with; its modes are very numerous, but whatever be the method, it is essential that the scion and stock be at least of the same genus, if not varieties of the same species.

There are exceptions to this as to most general rules. The medlar and the pear will unite with the hawthorn, though the genera be different, because they happen to have some peculiar assimilations of organisation and temperament, the want of which prevents the union of other trees, as of the peach with the cherry, and of the apple with the pear; the latter indeed may be grafted, but they do not thrive well.

For small grafts of fruit-trees, Rose-trees, Pelargoniums, Camellias, &c., a cement of these ingredients is excellent: Rosin, one part; pitch, ditto; bees'-wax, half-part; to be melted together, and applied with a small painting brush or a few feathers together over the thread. A man accustomed to this method of grafting (no favourite with our gardeners, however) can graft one hundred or more stocks in a day.

It is by cleft-grafting, however, that the French propagate their numerous varieties of Roses in spring: they consider it the most simple and certain method, if care is taken during the summer to pinch the shoots of the Rose grafts to from four to six inches to make them branch, and to rub off most of the buds at the lower end. The French gardeners obtain Roses in two months from the time of grafting, and for stocks they use Dog-briers at least two years old, which are removed from the hedges and forests. Those taken from a light soil are best, because their capillary roots are more abundant than those of Dog-rose. Briers raised in a stiff one, to the nursery in the previous autumn, and planted closely in rows eighteen inches asunder, each stock being tied at two points to two transverse stakes fastened to upright ones.

Side-grafting may be usefully resorted to for supplying a branch in a vacancy, or, "for the sake of having different kinds of flowers and fruits upon the same tree;" but it is better to graft on the side branches than on the main stem, because in consequence of the flow of the sap not being interrupted by heading down the tree, the success of this kind of grafting is more uncertain than almost any other method.

A mode of side-grafting, termed by the French gardeners *placage* (veneering), is employed by them for Pelargoniums and Camellias. It consists in attaching the graft, which is a thin layer of the bark, with a bud attached to the stock, from which a corresponding slice is smoothly detached to give place to it.

When the stock and graft are of the same size, and that a convenient one, they may be easily united by ordinary splicing; but to obtain more points of contact, and to fix them firmly together, the bark at each extremity, where the knife first entered, should be raised a little, to admit its lapping over the narrow end of the splice, which must be neatly bevilled to make it fit closely.

Graft and inarch Camellias, &c.

Herbaceous plants, such as the Dahlia and Pæony, may now be propagated (as a matter of curiosity) with a dormant eye, that is by inserting a bud on the neck of the tubercle in a small hole made to receive it, and so that the base of the bud shall be on a level with the surface of the tubercle. Grafting-wax must be applied to the edges. If the tuber be potted and put in heat under glass, the bud which is not to be covered with earth will push. A growing shoot instead of a bud may be inserted in a later period of the year, when the natural season for the vegetation of these plants has arrived.

A SHADOW ON THE ROOF.

By Lewis Myrtle.

Home is a foretaste of Heaven! At least, so I could not help thinking, while the fire-dogs glowed with the bright flame that jetted against their ruddy cheeks.

I had been musing on the endless chances there were in a man's life; the varied views we take, as we get on; the ceaseless turmoil that bewilders us; and the greedy scramble that jostles us this way and that:—and I thought there was left us *one* nook of safety, where the maddest world-storms cannot reach. My heart grew grateful; and my fancies ran on at once to weave into the tapestry of my thoughts the picture of the Home Spot, that always melts us into love.

Everybody looks forward to the time when he shall have a Home. No matter what it is, or where the spot; no matter how rich or how poor; the golden atmosphere that hangs about the name of Home, is the medium through which we view the object itself. A garret or a palace; a hovel or a hall; pinching poverty, or wasteful wealth; to our hearts it is ever the same. Only let it be home. The name itself is a magnet; and all our brightest hopes, like glittering steel-filings, are caught up by it as an instinct. It binds us by cords that are stronger than bands of iron; by mystic powers above all worldly rules, beyond all systems, irresistible, and ever-enduring. What statutes so binding as the unwritten code of the fireside!

——I drew a picture of an odd little moss-speckled roof, dropped down in a clump of living green. It was all walled in with dense leaves and flowers. Vines clambered to the eaves, twining leafy garlands about the columns on their way, and hanging trembling bunches of blossoms just over my head. Honeysuckles poured rich streams of fragrance into the little parlour from out their ruby goblets; and gadding sprays burst through the opened window in upon the floor. A neat piazza belted the building, around which grew an intertwisted lattice of leafy shelter. There was a low and broad bench on the piazza, where three might comfortably sit in the cool of the summer evenings, and drink in the exhilarating draught that drew through the screen.

A lawn of the deepest emerald stretches down to the road, threaded by but a single walk, on either side of which the rich turf rolls itself up in smooth and full ridges. Clumps of syringas stand like sentries here and there, and the air is loaded with their sweet fragrance—a dwarf fir on one side, and a dwarf fir on the other. No tawdry-looking flower-beds, laid out at such pains to catch the vacant eye; no gaudy and glaring flowers, to inspire only discontent by their contrast with the unpretending green around them:—only wild-roses,—honeysuckles,—trumpet-creepers,—and luxuriant woodbines. They fling a leafy veil all over the spot. They wreathe the posts; shadow the light screen; fringe the casements; hide the rough angles of carpentry; and thatch the low roof with their ten thousand leaves.

Behind this little homestead, that now seems to rise out of the living wood-coals before me, there is a carefully plotted garden; where the squash-vines run right over the mellow soil, and on the rough back of the old stone wall; and bees keep up their busy hum all through the summer day among the yellow squash-blossoms; and the airy humming-bird daintily sips honey and dew from the white scarlet bean-blossoms; and the green and plump currants hang in myriad clusters, for the length of the garden avenue.

A little gate swings back at your touch, and shuts itself as you enter. A clean and hard walk conducts you to the extreme end of the ground. There are no terraces; no grounds; nor lowlands; nor miry, swampy places. It is all an unbroken plain, into which you can almost step from your kitchen door. It is your little kitchen farm; and the owner of a thousand acres boasts not more of his vast heaps, than you do of your little stores.

What phalanxes of fruit trees! The rich damsons look plump and pulpy, in among the leaves; and white, and red, and black cherries are bursting out in bunches from the limbs; and pears, that will soon moisten your palate with their delicious juices, are swelling, and softening, and ripening in the sun; and smooth-cheeked peaches are beginning to wear their most tempting blushes, as the down begins to wear away; and the luscious greenings are thrusting their round heads through their glossy leaves, to get a word of commendation from their owner; and the grapes are forming in long clusters on the vines that run over yonder trellised arbour.

A neat row of white hives is sheltered from the cutting edge of the north wind by the wall, out from which streams a steady line of little labourers all through the day. They buzz in the squash-blossoms, and hum drowsily about the bean-flowers. They people the cherry, and plum, and ruddy apple-blows, and wing their way over into the adjacent field, where the sweet white-clover blooms, and beds of thyme breathe out their balm. All day long they keep at their work; up before you in the morning, and hardly quiet when you loiter in your garden at evening. Their street is never silent or deserted, while Summer reigns in the fields and gardens.

You own a rich meadow beyond that pasture, and the grass is already rolling like waves in the sweeping breeze. Your heart swells to see it glistening so in the sun; and you confess to yourself, that there is a secret joy in the very thought that it is yours. A few trees dot the pasture-land, and patient cows stand chewing their cuds, and stamping their hoofs, in the shade. They look mildly at you, as you pass, but never stop grinding the cud. You almost wonder if they, like yourself, have "sweet and bitter fancies!"

A belt of wood bounds your pasturage on the north side, where you often go with your young wife, on these balmy mornings in June, and gather primroses and violets,—or saunter thoughtfully in the shadows. A thousand memories your lips cannot fashion into expression, hang up, like golden fruitage, among those old tree-boughs, and linger about the aisles. You feel that you know—

——"Each lane, and every alley green,
Dingle, or bushy dell, of this wild wood,
And every bosky bourn from side to side,—
Your daily walks, and ancient neighbourhood."

A noisy brook riots through the solitude, curling its waters darkly beneath some gnarled old root, and leaping up to kiss the leaves of the wild vines that dangle from the branches. It washes over shining pebbles,—slips between rank sedges, upon a muddy bed,—steals softly through the emerald turf,—and rattles off with a gay laugh, and a saucy clapping of its hands, down by the fence, and away through the low meadow.

Home, thought I, taking a new start in my musings, is not altogether *without* doors;—and, with this thought, I began to paint the *inner* Home Life, that fuses all our thoughts, in its mystic crucible, into thoughts of Love.

A wife!—a young wife,—all love! The little cottage is full of sunshine. There never, surely, were *such* smiles before; never such musical laughter, bubbling all the way up from the heart. She reads to you when you are restless and ill; and you read to her in turns when she is weary with the never-broken round of household cares. She watches your breathing, when you are curtained in the sick-room; binds up your head with damp and cool bandages; places a wine-glass of fresh flowers on the little stand beside your bed; and talks to you in the low music of her soft and melting voice.

She is as airy as the sprite, and as graceful as a fawn; yet she is none too ethereal to repay your love with genial sympathy, and welcome words, and patient, self-denying deeds. She does her hair in papers to please your boyish whim, but never breaks a link of the chain that binds her heart to the Home

Hearth. She chats with you of Montaigne,—and Shakespere,—and Spencer,—and sweet Jeremy Taylor; and drinks in your syllables, when you talk to her of Cordelia,—and Corinne,—of Jean Jacques, and Coleridge, and Keats.

And she always dresses so charmingly, too! Nothing can surpass, for sweet and unpretending grace, those summer morning costumes, in which she trips out through the open door, and slips her dainty hand through your arm for an early walk. Her throat is as fair as the fairest alabaster; and the scarlet just tinges her cheeks with matchless beauty; and as she looks at you so lovingly from out those large, dark, dreamy eyes, you almost unconsciously draw her closer to your side, and press your lips to the forehead of your child-wife.

It is home wherever she is. If you stroll with her down the green lane, chasing the playing sun-blotches that fall on your path—your cottage, and all its wealth, is in the lane with you. Without her, it is home nowhere. You seem to lose your reckoning. The sun is blotted out of the sky. You grope your way. The birds do not sing. You see no flowers,—nor silver-winged insects—nor gaudy butterflies. Your heart swells with misgivings for her, lest some impossible harm has come nigh her. And your spirits grow weary and faint; and your thoughts brood in desolate places; and your hold on life grows weaker and weaker;—till you catch her smile again in the low doorway, or fling your arms around her at the little wicket.

Home is Heaven—say you to yourself,—as you draw off your boots at evening, and in slippered feet sit down to hear the simple story of her day's life. She draws her chair beside your own—and looks alternately in the glowing fire, and your delighted eyes.

Foolish little creature!—you tell her; she sees only *herself* in your eyes! It is conceit!

And she will shake her head at you so playfully,—and lay her little white hand over your mouth so lovingly,—and in such a childish tone, tell you that you are her "naughty boy,"—that she makes you love her ten times the more, in very spite of yourself.

As you sit before the gleaming hearth, you read to her from large books of travels, or from charming and simple poems, or from some sad and touching tales; and when you suddenly look up, you unexpectedly see the tears swimming in her eyes. You stop to ask her what it is that so saddens her; but the sunshine instantly breaks out in the midst of the April rain, and she only laughs at you for your inquisitive folly. And then you tell her, half seriously and half in jest, that woman is just what *she* is now—half smiles, and the other half tears. For your impudence you get a kiss, and struggle valiantly to free yourself from her embrace. But your release is only on condition that *she* is excepted from your remark. And in a sudden impulse again, you confess that there is no truth at all in the libel you have just uttered.

Your friends wonder how it is, that some men can stumble on such a mine of happiness as you have; and in the midst of their compliments and self-reproaches, they get urgent invitations to visit you as often as they will. And then they protest, that your dear Maggie is so charming; and has so much grace; and presides at table with such simple dignity! They will tell you, when you stroll with them out on the piazza, they would have married long ago, if they could only have been as sure of—

You interrupt them at this point. You know that it had better remain unspoken. It is flattery you can bear little better than Maggie herself.

Your relations come a great way to see you in your new and quiet home; some to congratulate—some to advise and forewarn—and some to study out secret weaknesses. But they are all alike melted by the magic of her simple and earnest love. Their cynical syllables die on their lips. They forget all their own perplexities, in the sunshine of your complete happiness. They even become envious, and almost tell you so. But that they need not do: you can read it in their looks.

Maggie is perfection — they say to themselves. Never need a man have a better wife. Never found man a truer one.

—But she is only a *child!*

Ah! would they, then, rob you of the untold wealth of her early love —of the fragrance of her freshest feelings—of the dew, of which you found her young heart so full? Can there be no love, except the fruit of policy—no marriages, but those of convenience—no heart-riches, save those of years? Is your child-wife any the less a woman, because her love is so undivided—any the less a helpmeet, because she is such an innocent—any the less a blessing, because she knows the world only through you?

Must our hearts be torn, and seared, and probed, and worn with the iron,—before we can learn to love? Doth profounder happiness lie in the broad ways of world-wisdom, than broods all along the by-ways of innocence? Can any statutes limit the impulses of the heart that is early inclined to love? Can there be no maturity, then, even in childishness?—no bliss, except it be embittered with the aloes of a cruel experience?

You reason your heart into conclusions that abundantly satisfy you, and leave yournear-sighted relations to conclude what they will. So you are but strengthened in your happiness, and grounded in your hope of the future,—it is enough. They do not see through your eyes. Their hearts do not throb like yours. They would laugh at you remorselessly for your fine sentiments; and tell you, with a profoundly wise wag of their heads,—Love isn't *bread and butter!*

But what of that? What care you? You retort—to yourself, of course,—But what blessing would bread and butter be *without* Love? And you stoutly resolve, laying aside the tenderness of your feelings for the moment, that you will make your Home Life a deep sermon for these blind relations; —and that each year shall be a new and brighter page for them to peruse.

Your and your wife's heart are knit by a new tie;—stronger, deeper, fuller, than any you have yet known.

She shows you her infant; and begs, by the tender looks of her moistened eyes, that you will love it for her sake.

—— Ay, you respond,—and for its own, too!

It is a girl. It comes to you like an angel in a dream. It has the innocent, yet mysterious smile of a seraph. You lean over it while it sleeps, and your heart goes up to God in a psalm of thanksgiving.

A new root has struck into the heart-soil. You feel that you must watch it patiently, and guard it with the tenderest solicitude. It is a part of your child-wife; it is a part of yourself. Your souls have been knit mysteriously together, and this is the new form they have taken. Oh, how you yearn towards it already! How you wish it could receive into itself the crowded feelings that swell your heart! How you desire that you could read the hidden history of its spirit life, and satisfy yourself that it is really an offshoot from your own soul! And yet, there hangs a strange feeling about you, that it can be no other than the twin soul of yourself and your dear Maggie.

> "A babe in a house is a well-spring of pleasure."

So the poet tells you, and so your heart believes. The countenance of your wife tells you so. Her cares are doubled; but her troubles are divided. Your sympathies are instinctively more ready, and full, and effective, for her; and the burdens, in consequence, only become the lighter. She does not now stop so often to humour your little caprices; but your caprices, you find, have all vanished. You do not now exact so much of her precious time. You readily give it all up to another. Ay,—and you give up very much of your own precious time, too.

The little cottage was full of sunshine before: now it is all ablaze. A new life has begun within it. A mysterious germ has suddenly shot up beneath the little roof-tree. What was before only a pictured fancy has now become a living fact. Your tenderness has budded into a palpable form. Your love has become impersonated. Mysteries are expanding and ripening into experiences. The wealth of your heart you can now hold in your hands. And still the mystery lurks in the revelation; and the dream sleeps in the reality; and the spirit does not altogether reveal itself in the living form. You catch only bright and broken glimpses; the brighter, because broken.

And this is the study that Heaven has given your heart. It will surely serve to perplex you more and more, every day of your life; and the more accustomed to your outward senses it becomes, the less will your heart have learned of its real nature. And it is by so divine a mystery, that God has promised to keep your heart full of joy, while yet it continues to hunger for more.

But time does not stop for your happiness. It rather seems envious of your possession.

What a calm, quiet day is the day of the Christening! How sweetly your little cherub looks in that snowy lace cap! And how she makes all the spectators smile, as she throws out her chubby hands, and, with bubbling syllables, looks up so earnestly into the face of the white-robed clergyman! How the soft air of the morning,—the fragrant drifts from the clustering roses and clumps of lilacs,—and the mellow warmth of the bright sunshine,—all help to swell the joy of your heart, till it seems that it must at length overflow in tears!

The baby goes before, in the arms of the maid; and Maggie,—now dearer to you than ever,—leaning on your arm, follows close behind. Your spirits are all in a glow. You scent the blossoms, and tell your wife how ravishingly sweet they are to the senses, though she knows it quite as well as yourself. You look up into the stainless bosom of the sky, and down again to the earth. Your eyes chase swarming butterflies, and you fancy for the moment that the flowers have taken wings. You peep over into neighbouring gardens, and across rolling lawns. And then your eyes come back to your wife again, and you draw her still closer to your side.

"Be careful not to stumble!"—you caution the maid.

Maggie releases herself from your arm for a moment, and takes a few hasty steps forward to see that the child is safe. She lays her own cambric kerchief over its face, that the garish sunlight may not weaken its eyes,—and is at your side again.

—— You ask yourself if ever two loving hearts were so happy before!—

Your little Alice soon becomes the pet of the whole neighbourhood. Children drop in at the cottage on their way to school, and ask to see "the baby." And maids from distant houses bring other babies to see this beautiful wonder of yours; and you laugh till you cry, to see the inexpressibly wise looks with which they will regard each other. You catch her up, in one of your sudden impulses, and toss her quite to the ceiling; and she will be so full of glee with your playful effort, that her fat little arms will instantly go up to you again, for a repetition of the fun.

Books!—what are books to you *now*? There is not a tithe of the life on all their pages, that you read every moment in the face of your own offspring. And how burdensome become your daily duties, at thinking of the hours that must elapse before you can see your idol child again. How heavily lag the moments between morning and afternoon. You quite begrudge time of the happiness of which it is robbing you. No weary, heart-saddened school-boy ever looked forward more wistfully to his dismissal.

—— Your child at length syllables your name—"papa!"

What a fresh joy!

To feel that you are recognised by a new spirit; that your very smiles are at last rightly interpreted; that your love is beginning to bud and blossom in the warmth of home!

To know that your day-dreams are faster and faster ripening into realities; that what you once regarded as a beautiful myth, is every day becoming less a fable; that the ripe, red bud, is steadily coming through the parted leaves!

—— Never was there such a child before! Never, you think, was there so devoted a father. You carry it to the door in your arms, and let its ruthless little hands crush the swinging bells of the fragrant columbines. You teach it to creep about upon the thick carpet, pushing before it smooth and red-lipped sea-shells. You teach it to pick open your lips with its playful fingers, and reward it by a song beginning with—"Bah! bah! black sheep!" You blow kisses into its dimpled neck, till it hiccoughs for violent laughter.

As you sing it to sleep it will open faintly its drowsy lids, and hum with a baby discord the last syllables of your lullaby. And when it has finally sunk into deep slumber, you gaze long and earnestly upon its passionless face, and silently pray God it may long keep your heart as fresh and pure as it is at this moment. And then your dear Maggie comes into the room, and looks into the shaded face, and whispers, as if in the holiest confidence to you—"She's asleep!"

Maggie prepares the cradle, and into its depth you carefully lay your treasure. It partly turns its head, as you move to lay it down—but the sleep is unbroken. Your wife throws a long veil over its face, and you both leave the room together.

— And are there any noisy world-joys, that usurp the reign of a man's heart, at all comparable to so simple a joy as this? Sleeps there anywhere a fountain so full of sweet and clear waters as here? Can a man from any source so readily bring down the fertilising dew of heaven upon the soil of his heart? Is busy street-life as fruitful in deep and abiding happiness, as this innocent, almost child-like Home Life? Doth the ring of dollars echo one half as pleasantly as the ring of your musical baby-laugh?

Tell me, busy world-schemer, if all your successful speculations can compensate your inner heart for the remorse that must ever gnaw, when you reckon up the few short hours you spend at your hearth?—if the hollow voices of men do not mock all your hopes, when a swift memory of Home rushes over your brain?—if the fruits of success do not turn to dry ashes on the lips of enjoyment, as your heart reproaches you with their uncounted cost?

— But the scene suddenly shifts. You are in the little nursery. The curtains are all closely drawn, and the light is subdued and sombre.

Your angel-child lies on the bed. Her face is burning with feverish fires. Her hands are hot, and her head throbs with the fever. But her lips are parched and colourless. The dreamy eye has lost its lustre. She tosses her hands about restlessly, and murmurs faint and broken syllables. Her breathing is short, and fearfully quick.

You bend over the bed, and lay your own cheek close to her hot cheek, and ask her, in a sad whisper, if she is *very* sick—as if she could catch the meaning of your words. But she interprets the caress, though the words go unheeded by her.

Maggie stands by you, and you gaze long and anxiously at your child together. You both tremble, to see that the expression has died out from her eyes. You fear far more than you dare trust to words, when you behold their growing glassiness. Your wife stoops down and kisses the child's forehead, and gently smooths back its straggling hair, and talks mournfully to it of sickness, and tells it, tremulously, she hopes it will soon be better again.

You cannot stay to listen, and to witness, longer. Your eyes are growing moist, and you dash away a glittering tear, as you glide swiftly through the door.

The doctor meets you on the embowered little piazza. He is a kind and gentle man, and you place full confidence in his skill.

"Doctor," you say, "save my child!"

He has not a word for you in reply, but walks steadily in. There is a terrible earnestness in his tread. It smites upon your sore heart fearfully. You have not the courage to follow after him, but remain on the little bench on the piazza. The moments seem like hours to you. You wish he would return again, and yet you have not the heart to go back and learn the fate of your offspring. You dread to hear even the best, fearing it may be the worst.

Again in the nursery.

—— Your darling child is dead—just gone!

Oh! was ever such woe!

Maggie throws herself upon your breast, and buries her face from your sight. You hear her low moans, and feel the deep, strong throes of her agony. *Now* it is that you feel the need of a strong arm on which to lean yourself.

But you have no words. They would but vainly mock your grief. Your sorrows are dumb; they cannot find their way to your lips. Nothing now but silence—and sobs—and tears.

You gaze at the face of your dead child, standing by the bedside,—and your grief looms up big and gloomy before you. You cast off your hold on life altogether. The bud has been blasted before it had time to round into the fulness of maturity.

But another moan from your equally bereaved wife recalls you to yourself; and you now feel that you are bound to her by a double bond, that will grow stronger through your lifetime. You keep your eyes, however, still fixed upon your dead child; and the sad lines of the Poet sing in your sadder heart:—

"There is no fold, however watched and tended,
But one dead lamb is there;
There is no fireside, howsoe'er defended,
But has one vacant chair."

—— It is as bright and balmy a morning in summer as ever dawned.

The odours of the lilacs and laburnums float through the open window into the little parlour.

There is a dense crowd in the rooms; and people loiter about the outer doors, talking in low tones. Everything looks dark and fearful, and forbidding. The crowd seems but a bank of gloom.

A little coffin, polished and smooth, stands upon the table in the middle of the room. Its lid is laid back, and your dead child's face is upturned to your own; but the light has gone out of the beautiful eyes, and the prattle has died for ever on the pale lips.

A few white snow-drops are strewn over the coffin: and mothers lift their blue-eyed children in their arms, and let them look in silence at the face of the little corpse.

And parents, who have been themselves bereaved, strive to keep down the choking sensation in their throats, and turn suddenly away with their eyes full of blinding tears.

They sing a hymn. Your young wife—now all the world to your bleeding heart—leans heavily the while against you, and sobs as if she would not be comforted. You draw her closer—closer to you. Oh, how much more deep is your love for her now! How much stronger is the bond that has been strained with sorrow.

—— Back again from the silent cemetery. Little Alice you have left behind you.

The house is deserted. Your wife has thrown herself upon the bed, and buried her face deeply in the pillows. You enter the little parlour. How silent! How sad are all the voices of the summer morning as they reach you through the open windows!

You seat yourself by one of the windows, and pluck leaf after leaf of the vine that shelters it.—How desolate! How deserted!—Was ever trial like this?

You wonder why your heart was schooled so mysteriously to love, and then cruelly crushed with such a weight of grief. You think there must be something wrong in the ordering of events, and your untutured heart broods over unformed rebellion against God's goodness. The agony is so great, that you become, temporarily, its victim.

—— And then there comes—slowly, after long reflection, after fervid prayer,—a recollection of your heart's earlier desire; a remembrance of your earnest hope, that your infant might be the means of keeping your heart *full*, and *fresh*, and *free*.

A golden gleam of consolation breaks through the clouds that beset your soul. A bright ray of light comes dancing across the dark and troubled waters of your heart. You remember your early prayer, uttered when this angel-child first began to grow into the heart of your nature; and you believe that the prayer reached Heaven!

All through your lifetime now, little Alice will ever be your CHILD. She will add nothing to her years in your memory. Her image, enshrined in your heart, will keep it ever fresh and young, through the silent lapse of years. And when you lie down to die yourself,—weary, and worn, and heart-broken with the world's selfishness,—you will be consoled beyond all measure with the hope of regaining your child again the same gentle, pure, spotless child that has been for years so mysteriously drawing you to her with the golden-linked memory of her brief existence!

— Maggie lays her head upon your shoulder, and you weep together for deep and unutterable joy.

THE CONTRADICTORY COUPLE.

"I DO believe," said the husband, taking his spoon out of his glass, and tossing it on the table, "that of all the obstinate, wrong-headed creatures that ever were born, you are the most so, Charlotte."

"Certainly, certainly; have your own way, pray. You see how much I contradict you," rejoined the lady.

"Of course you didn't contradict me at the dinner-table; oh no! not you?" says the gentleman.

"Yes, I did," says the lady.

"Oh! you did!" cries the gentleman. "You admit that?"

"If you call that contradiction, I do," the lady answers; "and I say again, Edward, that when I am wrong, I *will* contradict you. I am not your slave."

"Not my slave!" repeats the gentleman, bitterly; "and you still mean to say that in Blackburn's new house there are no more than fourteen doors, including the wine-cellar."

"I mean to say," retorts the lady, beating time with her hair-brush on the palm of her hand, "that in that house there are just fourteen doors, and no more."

"Well, then," says the gentleman, rising and pacing the room with rapid strides; "this is enough to destroy a man's intellect, and drive him mad."

By-and-by the gentleman comes to a little, and reseats himself in his former chair. There is a long silence, and this time the lady begins.

"I appeal to Mr. Jenkins, who sat next to me on the sofa, in the drawing-room, during tea."

"Morgan, you surely mean," interrupts the gentleman.

"I do not mean anything of the kind," answers the lady.

"Now, by all that is aggravating and impossible to bear," cries the gentleman, clenching his hands, and looking up in agony, "she is going to insist upon it that Morgan is Jenkins."

"Do you take me for a perfect fool," exclaims the lady. "Do you suppose I don't know that the man in the blue coat was Mr. Jenkins?"

"Jenkins with a blue coat?" cries the gentleman with a groan; "Jenkins in a blue coat?—a man who would suffer death rather than wear anything but brown."

"Do you dare charge me with telling an untruth?" demands the lady, bursting into tears.

"I charge you, ma'am," retorts the gentleman, starting up, "with being a monster of contradiction—a monster of aggravation—a—a—a—Jenkins in a blue coat! What have I done that I should be doomed to hear such statements?"

KNOWLEDGE of our duties is the most useful part of philosophy.

MEASURE your life by acts of goodness, not by years.

RECEIVE blessings with thankfulness, and afflictions with resignation.

THE best practical moral rule is never to do what we should at any time be ashamed of.

VALUE a good conscience more than praise.

CONTENTMENT BETTER THAN WEALTH.

It was towards the close of a delightful day, early in the month of September, that a splendid equipage was seen approaching a small village, situated about thirty miles from the metropolis. It contained but two persons, one an elderly gentleman of stern and commanding appearance, the other a lady apparently about eighteen, whose pallid cheek betokened absence of health, though the calm and gentle expression which dwelt upon her finely-cut features rendered her an object of interest, if not of loveliness. They were for a long time silent, both apparently occupied in deep thought. At length the gentleman turned suddenly towards his daughter—for such she was—and regarding her for a moment with a look of affectionate interest, said :—

"Emma, my dear, you seem fatigued. Will not this day's ride be too much for you?"

"Oh no, father," replied the lady, "your fears render me doubly the invalid that I am. This delightful country air will soon cause new life to thrill through every vein. Come for me in a few weeks, and you will find your Emma the same wild, sunburnt creature that used to romp and sing among the old trees that surround our beautiful home in the valley of the Connecticut."

"Heaven grant it may be so! The situation I have chosen is every way calculated to gratify your rural taste. There, see as we turn the angle in the road, it is plainly visible—that fine old mansion, with its spacious, airy apartments, which open in the rear upon what looks to us like an impenetrable forest, but you will find it filled with innumerable walks, which intersect each other at every turn, where you can wander at will, and dream of romance and nonsense to your heart's content; but mind you, Emma, not of love—you see I dread a rival in the affections of my darling. But here we are, and here's Abby in the door, waiting to welcome us, and a dreary time she will tell you she has had of it these two days, in this dark old place, without her young mistress."

Mrs. Howard, the kind hostess, with her two daughters, Celia and Julia, followed the faithful old nurse in her welcome greeting, and ere many days had passed those dark old woodlands resounded with the merry shouts of laughter which sent the timid birds soaring high above their forest home, alarmed at such evident manifestations of life in their hitherto quiet domain.

Her father saw everything arranged for her comfort, and then left her to the care of Abby, the faithful nurse, who had watched over her from childhood with a mother's care, while he returned to the city, where his extensive business demanded his presence, for he was one whose idol was gold.

He believed it the talisman which would ensure happiness, and his whole life had been one struggle for its attainment. The world gave him credit for success, but in this, as in many other instances, it judged not rightly. Though he had commenced business with a handsome fortune, yet repeated losses, joined with an expensive style of living, had long ere now consumed it, and nothing but his established reputation as a man of wealth had prevented his creditors from becoming clamorous. He had married, too, a young and lovely wife, though less for her personal attractions, and inestimable worth, than the noble fortune which she brought him. That, too, was gone; and she, the pure, the lovely, and the innocent, whose fate had been thus unequally linked with that proud, imperious man, rested beneath the wild flowers of her own loved grove. Such had been her request.

"She would rest," she said, "where the din of business could not reach her, and where the timid birds might chaunt her requiem, and the wild flowers grow unmolested upon her grave."

And her wish was gratified. The favourite haunt of her early years became her final resting-place; and around the rich and costly monument which rose above her tomb, the wild flowers wreathed their tendrils, and shed their sweet perfume; while the mournful chaunting of the night bird, joined with the rustling of the trees above, seemed indeed a fit requiem for the departed.

By Mr. Morrison this blow was severely felt. Though affection had been but a minor inducement to the amour, yet adamant indeed must have been that heart her kindness had not won; and the union which was at first one of interest, at length became one of affection. But now she was gone, and Emma, his only child, became the object around which his affections centred. Her happiness lay nearest his heart, and believing as he did that it was dependent on wealth, his anxiety to gain it for her sake increased in proportion with his affection, till it became his ruling passion. Sundry means were devised to secure an independence for his daughter, when he felt the foundation of his own fortune crumbling to atoms; but all seemed likely to fail, and now, as with a last forlorn hope, he turned to the one last expedient, that of selling his darling child for gold! Could he but see her independence secured by a wealthy alliance, he could summon the cold philosophy of his own proud heart to his support, and retiring within himself, live upon the frowns of the world, whose favours he no longer sought to court.

Sick of the contest, the turmoil and strife, with which he had been surrounded since his first entrance upon the stage of manhood, and knowing no higher source from which to seek enjoyment, no wonder his selfish heart became frozen, and every kind impulse which his love for Emma had called up, smothered amid the darkness in which it had found birth. Then wonder not, kind reader, that in choosing a husband for his daughter, the ingots of gold which his coffers contained were his first and most important consideration; and in Mr. Henderson, one of Emma's most devoted admirers, he fondly looked for a realisation of his wishes.

The possessor of a princely fortune, which he inherited from his father, with a character tarnished by no positive vices — nor polished by virtues either—and a person which, in his own opinion, was irresistible, he presented himself as a competitor for her hand, with every assurance of success; what, then, was his surprise at receiving a decided negative to his proposals, which he formally and with due ceremony forwarded by letter to Emma in her retirement! He had previously taken the precaution to procure her father's consent, and to him he immediately repaired, deeply chagrined and disappointed, not so much from unrequited affection as mortified pride. Her former indifference he had attributed to timidity, but the open and candid manner of her refusal left him no room to hope for success, independent of the influence of her father. But he could not, without an effort, relinquish so desirable an appendage to his own dear self as Emma and her imaginary fortune would constitute. He should be so envied by all his acquaintances; and then she would be such a queen in his magnificent house, and lend such a charm to his splendid entertainments; and, more than all, she was the only one among the fair circle of his acquaintance who had looked coldly upon him, and pride revolted at the idea that he, who had hitherto been invincible, should thus tamely yield to a capricious beauty.

For a moment Mr. Morrison sat grave and thoughtful—should she persist in her determination, poverty must be their lot—but she would not: his will had ever been her law, and she surely would not resist it now; but she concealed her feelings, and calmly assured him of his influence, and her ready acquiescence to his will. Emma soon returned to her home. The father, impatient for the consummation of an event which he felt to be so necessary, hastened her return, as her letters spoke of renewed health and buoyant spirits. She left her humble friends with evident regret—gladly would she have lingered with them, in their dear forest home, through the sweet autumn months.

In Celia she had found a fit associate and confiding friend. Intelligent and amiable, her society was no less courted for the pleasure, than for the instruction it afforded; and the sprightliness and childish simplicity of Julia delighted and interested her. But there was one other she regretted to leave more than those.

Frederick Clifton had won her first pure love, and they only waited for the consent of her father ere they plighted their vows of mutual faith and constancy. She first learned to love him as she sat beneath the roof of their unpretending village church, listening to the truths which he declared with such force and clearness; and, in their future intercourse, she learned to revere him as a being but little lower than the angels.

In her first interview with her father he alluded to the proposals which he was aware she had received from Mr. Henderson, and expressed his wish that she should accept them. In vain did she plead her want of affection, and the impossibility of happiness with such a man.

"It must be so," he said; "my word is passed, and I cannot recal it."

"Love him I cannot, and never will I sacrifice my happiness by a union with a man I despise. By so doing I am not unmindful of the duty I owe you as a daughter, neither would I be unmindful of that I owe to Him above, in whose sight I could but plead guilty were I to bestow my hand on one for whom I feel neither respect nor affection."

"Emma, you know not what you do—would you see your father a beggar? Would you yourself become a dependent on the bounty of others? If so, persist in your course, and you will be gratified. Aye, you may learn to sue for favour at the hand of him you now affect to despise."

"What mean you, father?"

"I mean as I say—I am beggared. I have not one guinea I can call my own, and it remains with you that I continue so. Accept the offered hand of him who loves you, and wealth and happiness will be the result."

"He loves me, say you, father? Love me indeed he may, as the heiress of your reputed wealth and honour; but think you he would accept the hand of Emma Morrison were it known she were penniless?"

"Ask not what he would accept—he claims it now, that is sufficient."

"Wed a fool for his gold! Oh, father! why did you teach me to worship the mind, not the man and his possessions, if you wished me to play the part you assign me?"

"Then I thought myself independent—you, the favoured child of fortune—and would have been proud to bestow you on the man of your choice, though wealth had not been his: but those times have passed, and now you must secure your station through the influence of a husband, or sink into obscurity and misery."

"Poverty is not necessarily attended by misery—it has no terrors for me. United to the man of my choice, though humble and obscure his lot, I shall be happy."

"Emma, answer me truly; have you ever seen one for whom you could relinquish your present station in society, and the luxuries with which you have ever been surrounded?"

"Yes, father, I have—for whom I would not only relinquish the luxuries, but the comforts of life, were it necessary."

"Foolish girl, you know not your own heart! You have seen too little of the world and its hardships to brave them thus. I gave you credit for more good sense. You will one day thank me for forcing you to yield to that which you regard with so much horror. I am not to be disobeyed," he added, assuming a fearful sternness, "with impunity. One week sees you the bride of Mr. Henderson. Prepare yourself to act accordingly;" and he left her with a frown upon his brow, such as she had never before seen directed towards her.

That day it was announced that the proud, the envied aristocratic

Mr. Morrison, was a bankrupt, and the announcement brought joy at least to the heart of one, and that one his own daughter, for she deemed it but the precursor of other intelligence—assured it was her reputed wealth more than herself her tormenting suitor sought; and she was not mistaken, for the next day brought with it an humble apology from Mr. Henderson for the unhappiness he had caused her, begging she would not distress herself further on his account, as he could never think of urging a suit which, he regretted to learn, was so repugnant to her will. A proud triumphant smile lit up her features as she sought her father, into whose presence she had not dared to venture since he left her with that frown upon his brow. She found him seated in the library. A haughty, determined expression dwelt upon every feature. There he sat, motionless, and apparently as insensible of all outward objects as the marble statues with which he was surrounded. She paused as she entered, awe-struck by the solemn and death-like silence that prevailed, and she half repented the errand on which she came; for the moment she thought no sacrifice too great which could add to the happiness of that dearly-loved parent. He turned and gazed coldly upon her, but deigned to take no further notice of her presence. She advanced tremblingly and placed the letter in his hand.

He glanced hastily over its contents, then, crushing it, flung it from him with scorn.

Emma stood riveted to the spot, like one who had been suddenly deprived of power and will. At length the violence of his rage gradually subsided, and for a few moments he sat calm and thoughtful; then the overcharged fountain of his heart gave way, and he wept. Yes! that proud man wept. He whose nature was never before softened by adversity, was now humble and contrite as a child. Then came Emma's turn for action. The sight of tears—tears upon her father's cheek—called up every tender emotion of her soul, and with a calm and dignified demeanour, which would not have disgraced one older in years and experience than herself, she advanced and poured words of consolation into his ear. She told him of the enjoyment to be found in a calm, secluded life, arising from the consciousness of having faithfully discharged the duties which Heaven imposes on us.

It was a strange sight; that proud, imperious man, humble even as a child beneath its parent's reproving rod, and that young and timid girl, advising, consoling, and reproving even the grey hairs of age, with all the calm philosophy of experienced maturity. And then he drew her gently to his bosom; and his burning tears fell upon her brow as he told her it was not for himself he wept, for with him life's sun was nearly set, but for her, the cherished idol of his heart, whose fragile bark he must see thus early launched upon the boisterous tide of adversity, to anchor, perchance in the haven of despair.

"Nay, father, speak not thus; weep not for me. While health affords the means, our livelihood shall be nobly earned — not grudgingly, but with a buoyant heart and right good will, and we shall yet be happy—very, *very* happy. Though humble be our home, yet you shall see that your daughter is not unskilled in those arts which render even poverty endurable. You shall learn that happiness depends not on wealth—not on the multiplicity of life's blessings, but rather results from a proper control of the passions and affections with which a wise providence has endowed us. Together will we study the book of Nature, through that communion with Nature's God, combining the rare delight of intellectual and heavenly enjoyment with the sublunary cares and duties in which we may be called to bear a part; and think you, father, that we shall not yet be happy?—even happier than we have been here, amid all the splendour with which we are surrounded."

"You are a sweet enthusiast, Emma. Heaven grant that your young heart be not crushed by so rough a contact with this cold world, of which you know so little. You have many bitter lessons yet to learn. Where you look for kindness and sympathy, you will meet with cold neglect. You will too soon find the distinction made between the daughter of George Morrison the millionaire, and George Morrison the bankrupt. If argument or proof of this be needed, yonder crushed sheet would rise as the first witness. 'Tis but the first of a long list that will soon appear; perhaps in a manner less direct, but still quite as convincing to your sensitive feelings. Alas! that it should come to this! I have struggled hard to avert it, but to no avail. The only heritage I can now bestow upon you is an old man's blessing, and may Heaven's richest gift accompany it. If there is one, as you yesterday intimated, who values the jewel I have so long guarded for its own intrinsic value, I yield it to him. I have too much confidence in your judgment to think your affections would be unworthily bestowed. Pardon my harshness of yesterday. It was the result of desperation to see my ambitious dreams thus crumbling to the earth, like the baseless fabric of a vision! 'Twas a hard struggle; but 'tis over now. Those dreams of happiness have for ever flown, and I look not for peace this side the grave; but your young and cheerful heart may yet pluck flowers from what would prove to me but a barren stalk, and I would not, by any act of mine, interlace them with the cruel thorn and brier. I therefore consent—yea, more, I counsel you to bestow your hand on him who has already the possession of your heart."

"But, father, my home as well as heart must be shared with you. It would be but half a home were you absent. But the ordeal is not yet passed. After the lesson of distrust you have just taught me, I cannot reckon even upon Frederick Clifton's constancy. He was to come to-morrow to claim permission to instal me as mistress of his humble home, as he asserts I am now of his affections; but, perchance, instead of himself a missive like yonder one may appear. We shall see."

* * * *

It is again autumn. Time, never ceasing, never varying in its course, has rolled onward and brought us, after the lapse of three years, to the threshold of that humble cottage. Around it the richly-tinted leaves are falling in beautiful and luxuriant profusion, while the night-bird is warbling forth its tiny notes among the leafy foliage, through which the mellow rays of the rising moon just penetrate, and then spreading onward and around, illumine with dazzling brilliancy the pellucid waters of that noble river, as it flows away in soft murmurs towards the fathomless ocean.

Think you, dear reader, it will be an unpardonable intrusion upon their retirement, if with a gentle hand we push aside the foliage, and join them in their evening devotions, though all unseen by them? Look at that old man, whose bleached locks may perchance have seen the frost of sixty winters, seated in an easy chair, listening to the words of truth as they fall from the lips of one worthy to speak them. And that young and lovely female, seated near them, with her attention deeply fixed upon the calm, good man; and as he lays aside his book, and expatiates upon the wisdom, justice, and mercy of the Creator, her eye brightens, and the light of inward, heartfelt happiness, irradiates each feature. And as they kneel around the altar dedicated to the worship of Him above, with what fixed attention does she listen to the deep, eloquent prayer which falls from the lips of her husband. That grey-haired man, too, proud and haughty as is his nature, he has learned humility even from his own child; and the deep fervour of his voice and manner, as he, too, offers up his evening orisons, betokens the chastened feelings of a heart which has yielded to the mild influence of Heaven's will. See him now, as he imprints his accustomed good-night kiss upon the cheek of his beloved Emma; what does his manner indicate? Does it not tell of peace? Yea, more—of enjoyment—of happiness—pure, holy, passionless, divine?

UNCLE JOHN'S ENIGMA.

1.

COME, children, draw around the fire, and as your uncle John is here, he will describe to you a wonder, which you may study hereafter:—

Now, Uncle John, be pleased to show,
What giants from the earth do grow?

1 There is a giant born of earth,
2. Its parent died before its birth;
3. Though it partakes of vital breath,
4. It is the mighty child of death.
5. Its might is found where fire glows,
6. Its mildness where the water flows,
7. Its native forms all o'er the globe,
8. Are found in autumn's golden robe.
9. Its essence is the purest sweets
10. Made bitter; and so are its feats.
11. It has no tangible shape or form,
12. To every shape it can conform.
13. It has no colour but in flame,
14. And long it lived without a name;
15. Though then it reigned in many a clime,
16. A king of boundless mirth and crime,
17. It fell the father of a world;
18. Earth's victor to the dust it hurled.
19. In our days with many a guise,
20. The nations it can still entice;
21. For royal *fetes* it has a charm,
22. It nerves the felon's murderous arm.
23. It wafts in gentleness o'er the fields,
24. And to the grave rich harvest yields,
25. It gives to Britain mighty wealth,
26. But robs her more by quiet stealth.
27. It never fails to gender strife,
28. But has the fame of lenthening life,
29. Though war with blood has stained the lands,
30. Its victims form far larger bands;
31. With all its strength it cannot stand,
32. And can be mastered by the hand.
33. It never yet has killed a foe,
34. Though empires it did overthrow,
35. And though it has a boundless sway,
36. A thimble will hold it any day;
37. Or should the air be warmed a little,
38. It would escape in vapour subtle.

Now children, you may all be gone,
To solve this tale of Uncle John.

2.

THE name of a tree that in England grows;
A river next find that in Northampton flows;
A beautiful flower familiar to all,
A troublesome insect exceedingly small;
What misers will always contrive to conceal,
And a delicate fruit which I shall not reveal.
The heads of these words will give that which you
No doubt have been puzzled at times to construe.

3.

A PART of yourself, and part of a cow,
Place them together, you will have in view
A town on the Continent noted, ye fair,
For something which covers a part of your hair.

4.

IN number we are fifty-two,
A motley, quaint, and jovial crew,
We go wherever fortune sends,
By some deemed foes, by others friends.
In festive scenes we oft are found,
In dissipation's halls abound;
Four monarchies, with rogues in court,
Each in apparel of a sort;
One makes his kingdom in the heart,
Another takes the delving part,
A third is armed quite savagely,
A fourth lights up the other three,
We have a pope, we have a deuce—
I pray th' expression you'll excuse;
Our commons have their apple seed;
But 'stead of fruit a noxious weed
Springs up to choke the mind's best soil,
And a false pleasure proves fierce toil;
A pack of wolves—we fleece the sheep;
And leave them wasted hours to reap.

5.

IN a dungeon far beneath the ground
A Christian captive lay;
His head was bent, his arms were bound
And 'midst the darkness all around
He earnestly did pray.

He thought of that loved but distant land,
He never more should see,
Where he used my *first* with skilful hand,
And turned my *next*, as he oft did stand
'Neath his lady's balcony.

Not long did the weary captive pine,
No ransom could he pay;
My deadly *whole* round his neck they twine
And obedient to their master's sign,
They took his life away.

ANSWERS TO CHARADES, ETC., PAGE 40.

1. Land-scape.
2. Arbour
3. Ann-ounce.
4. Drug-get.
5. Ambition.
6. Off-end.

"TABLE-TALK" WITH ROGERS, THE POET.*

"BEFORE his going abroad, Garrick's attraction had much decreased; Sir William Weller Pepys said that the pit was often almost empty. But, on his return to England, people were mad about seeing him; and Sir George Beaumont and several others used frequently to get admission into the pit, before the doors were open to the public, by means of bribing the attendants, who bade them 'be sure, as soon as the crowd rushed in, to pretend to be in a great heat, and to wipe their faces, as if they had just been struggling for entrance.'

"At the sale of Dr. Johnson's books, I met General Oglethorpe, then very, very old, the flesh of his face looking like parchment. He amused us youngsters by talking of the alterations that had been made in London and of the great additions it had received within his recollection. He said that he had shot snipes in Conduit-street! By the bye, General Fitzpatrick remembered the time when St. James's-street used to be crowded with the carriages of the ladies and gentlemen who were walking in the Mall,—the ladies with their heads in full dress, and the gentlemen carrying their hats under their arms. The proprietors of Ranelagh and Vauxhall used to send decoy-ducks among them, that is, persons attired in the height of fashion, who every now and then would exclaim in a very audible tone, 'What charming weather for Ranelagh,' or 'for Vauxhall!' * * I recollect when it was still the fashion for gentlemen to wear swords. I have seen Haydn play at a concert in a tie-wig, with a sword at his side. * * I have gone to Ranelagh in a coach with a lady who was obliged to sit upon a stool placed in the bottom of the coach, the height of her head-dress not allowing her to occupy the regular seat.

"Boddington had a wretchedly bad memory; and, in order to improve it, he attended Feinaigle's lectures on the Art of Memory. Soon after, somebody asked Boddington the name of the lecturer; and, for his life, he could not recollect it.—When I was asked if I had attended the said lectures on the Art of Memory, I replied, 'No: I wished to learn the Art of Forgetting.'

"Dunning was remarkably ugly. One night, while he was playing whist, at Nando's, with Horne Tooke and two others, Lord Thurlow called at the door, and desired the waiter to give a note to Dunning (with whom, though their politics were so different, he was very intimate). The waiter did not know Dunning by sight. 'Take the note upstairs,' said Thurlow, 'and deliver it to the ugliest man at the card-table—to him who most resembles the knave of spades.' The note immediately reached its destination. Horne Tooke used often to tell this anecdote.

"When I was a lad, I recollect seeing a whole cartful of young girls, in dresses of various colours, on their way to be executed at Tyburn. They had all been condemned, on one indictment, for having been concerned in (that is, perhaps, for having been spectators of) the burning of some houses during Lord George Gordon's riots. It was quite horrible. Greville was present at one of the trials consequent on those riots, and heard several boys sentenced, to their own excessive amazement, to be hanged. 'Never,' said Greville, with great naïveté, 'did I see boys *cry so.*'

"Coleridge spoke and wrote very disparagingly of Mackintosh, but Mackintosh, who had not a particle of envy or jealousy in his nature, did full justice, on all occasions, to the great powers of Coleridge. Southey used to say that 'the moment anything assumed the shape of a duty, Coleridge felt himself incapable of discharging it.' * * In all his domestic relations Southey was the most amiable of men; but he had no general philanthropy; he was what you call *a cold man.* He was never happy except when reading a book or making one. Coleridge once said to me, 'I can't *think* of Southey, without seeing him either mending or using a pen.' I spent some time with him at Lord Lonsdale's, in company with Wordsworth and others; and while the rest of the party were walking about, talking, and amusing themselves, Southey preferred sitting solus in the library. 'How *cold* he is!' was the exclamation of Wordsworth,—himself so joyous and communicative.

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* Extracts from "Rogers's Table-Talk." Moxon.

"Dining one day with the Princess of Wales (Queen Caroline), I heard her say that on her first arrival in this country, she could speak only *one* word of English. Soon after, I mentioned that circumstance to a large party; and a discussion arose what English word would be most useful for a person to know, supposing that person's knowledge of the language must be limited to a single word. The greater number of the company fixed on 'Yes.' But Lady Charlotte Lindsay said that she should prefer 'No,'—'No' very oft meant 'Yes.' The Princess was very good-natured and agreeable."

GEORGE BIDDER THE CALCULATOR—THE BOY AND THE MAN.

The following account of a lecture delivered some time ago by George Bidder, Esq., once "the calculating boy," will be found extremely interesting to all lovers of figures and statistics.

Recently, at the Institution of Civil Engineers, there was something new under the sun. Contrary to rule and order, an oral lecture was delivered by George Bidder, on the faculty of mental calculation, illustrative of the peculiarity which, in bygone years, rendered him a mark of wonder, like Xerah Colburn and Jedediah Buxton. This faculty he pronounced capable of being acquired by many persons under teaching, to the extent of multiplying three figures by three figures, and by others to a greater extent consistently with the power of their memory to hold facts; but that in his own case the stress of mind became very great when greatly increasing the number of figures. Nor did he consider the faculty very advantageous beyond three figures. But all this technicality was a very small part of the pleasure felt that evening by an audience more crowded than ever was known in that theatre of science for practical objects.

We remember to have read years ago a magazine article on calculating boys, in which the writer laid it down as a kind of law, that one faculty absorbed all other faculties, like the snake-changed wand of Moses, and that George Bidder, having become an engineer, was in no wise remarkable in this vocation. The critical faculty of the writer was certainly not remarkable.

But one thing is worthy of remark—that George Bidder and Xerah Colburn, after being exhibited to the gaping crowds of curiosity-mongers, both became engineers; one in England, joining himself to the fortunes of Robert Stephenson; the other in America, whither he returned with his father, a poor man, after the late James Mill, Jeremy Bentham, and Francis Place, had vainly tried to stir up people here to a subscription, for the purpose of superadding upon the natural faculty the highest kind of education, as an experimental test. He now conducts a weekly journal of practical science in the United States.

But the charm of the evening was other than calculation. It was the tale, told with modesty and simplicity, of early struggle, from the condition of a labourer's child to that of a foremost worker at the great lever of modern civilisation—the iron railway. The whole man was changed. We had seen him, known him, again and again, in Parliamentary committees, fighting railway battles inch by inch, with a face as hard as tunnel rock, with no outward indication that he had a heart within him, or any perception other than that of money to be gained. We believed in him only as a machine for calculation. But Othello's story was not more moving than his tale of life struggle. There was no oratory, no trick, no boast, but an even flow of words without a fault in grammar; all so true, so simple, that the very words were witnesses to their own truth. The world was gone, and the child lived over again without calculation; and those who had never before recognised anything but a rough and unscrupulous antagonist marvelled as they listened. It was the triumph of nature over artificiality. The brother who taught him first and last to count up ten, the blacksmith whose forge he sat on with other boys, and whose bellows he was sometimes permitted to blow, and his subsequent lifelong attachment to his "earliest and best friend," Robert Stephenson, all presented a perfect picture to the mind's eye; and the speaker stood forth in his true form, with the outer husk removed, a manly-minded Englishman, with calm philosophic power of analysis, and yet withal a strong gushing heart. In truth there has been in the lives of these two men, Robert Stephenson and George Bidder, the old heroic spirit in a modern garb; Orestes and Pylades bent on railway-making—money-making also—but still doing the world's work, and not with a view to obtain false titles to shame their origin.—*Spectator.*

HOW TO BE MISERABLE.

"How to be happy," is a very common heading to an article addressed to the young. I have seen it in the papers so often, that I should not think of writing upon it. But I believe that I have never seen anything in print to tell young people how to be miserable.

"How to be miserable! Well, we don't want to be miserable."

Don't want to be miserable! How so? Then why do you take so much pains to be miserable? I cannot think how a child or a youth who is free from care or trouble, and full of buoyant spirits, can be miserable, without trying very hard to be so. But as I have seen a great many young persons, who not only seem determined to make themselves miserable, but everybody around them also, I thought perhaps they would thank me for telling them how they may do it easier.

In the first place, if you want to be miserable, be selfish. Think all the time of yourself, and of your own things. Don't care about anybody else. Have no feeling for any one but yourself. Never think of enjoying the satisfaction of seeing others happy; but the rather, if you see a smiling face, be jealous, lest another should enjoy what you have not. Envy every one who is better off in any respect than yourself, think unkindly towards them, and speak slightly of them. Be constantly afraid lest some one should encroach upon your rights; be watchful against it, and if any one comes near your things, snap at him like a mad dog. Contend earnestly for everything that is your own, though it may not be worth a pin; for your "rights" are just as much concerned as if it were a pound of gold. Never yield a point.

Be very sensitive, and take everything that is said to you in playfulness, in the most serious manner. Be jealous of your friends, lest they should not think enough of you. And if at any time they should seem to neglect you, put the worst construction upon it you can, and conclude that they wish to avoid your acquaintance; and so the next time you meet them, put on a sour look and show a proper resentment. You will soon get rid of them, and cease to be troubled with friends. You will have the pleasure of being shut up in yourself.

Be very touchy and irritable. Cultivate a sour, cross, snappish disposition. Never speak in good-nature if you can help it. Never be satisfied with anything, but always be fretting. Pout at your father and mother; get angry with your brothers and sisters; or, if you are alone, fret at your books, or your work, or your play. Never look at, or admire anything that is beautiful or good; but fix your eye on the dark side of everything; complain of defects in the best of things; and be always on the look-out for whatever is deformed or ugly, or offensive in any way, and turn up your nose at it. If you will do half of these things you will become miserable enough.

Rules for Study.—1. Learn one thing at a time. 2. Learn that thing well. 3. Learn its connexions, as far as possible, with all other things. 4. Believe that to know everything of something is better than to know something of everything.

THE POET LARK.

The purple hills are tinged with gold,
The evening hour is drawing nigh;
And yet, near yonder cloud, behold
The lark is soaring in the sky!
Why is he there at such an hour?
The twilight creeps the vale along,
The drowsy bee now quits the flower,
The thrush hath closed his vesper song.

I heard him o'er the waving corn,
Herald the dawning of the day,
And now, on fluttering pinions borne,
It chants its parting roundelay.
Hark how the little minstrel sings,
Among the golden clouds of even;
While up he springs on trembling wings,
As if his spirit were in heaven.

Is it ambition calls him there,
There prompts so sweet a song to flow?
Ah! no—no, no, 'tis all for her
Who nestles in the vale below.
For her who mounts the clouds among,
For her attunes his melody—
And thus, my love, expressed in song,
Is all that I can give to thee!

THE DEAD CHILD.

O close with reverent care those eyes;
Their meek and sorrowing light hath fled;
No trembling gleam through mists of tears
From those dimmed orbs will more be shed

Draw down the thin and azure lid;
No look of mute appealing pain,
No piercing anguished gaze on heaven,
Will strike through those blue depths again.

Now gently smooth her soft brown hair:
Shred not those glossy braids away,
But part the bright locks round her brow,
As sweetly in her life they lay.

Press one soft kiss on those soft lips:
They thrill not now like flickering flame:
They'll ne'er unclose in troubled dreams,
To breathe again that cherished name.

But press them softly; still and cold,
They part not with the sleeper's breath—
Fear thou to break the softened seal
Left by the kindly touch of Death.

Wrap the white shroud about her breast:
No trembling throb shall stir its fold:
No wild emotions wake to light,
Within that bosom snowy cold.

Fold tenderly her fair young hands:
The heart beneath in stillness lies;
They'll never strive, with tightened clasp,
Again to hush its anguished cries.

Oh! fierce but brief the storm that swept
The bloom from this pale sleeper's brow;
And keen the pang that rent apart
The bosom calmly shrouded now.

A PIC-NIC.—By M. Collins.

The lake is calm. A crowd of sunny faces
And plumed heads and shoulders round and white,
Are mirrored in the waters. There are traces
Of merriment in those sweet eyes of light.
Lie empty hampers round; in shady places
The hungry throw themselves with ruthless might
On lobsters, salads; while champagne, to cheer 'em,
Cools in the brook that murmurs sweetly near 'em.

Green leagues of park and forest lie around;
Wave stately antlers in the glimmering distance:
Up from the dusky arches comes a sound
That tells the story of old Pan's existence.
And now in song the summer wind is drowned;
Now comes a call that conquers all resistance:
A dance upon the turf! up, up, instanter,
Away with quarried pie, and stained decanter.

Small hands are linked, and dance divinest tresses,
And agile feet fly down the pleasant glade in
A merry measure; through the deep recesses
How gaily trip they, youth and laughing maiden.
The shaken turf is swept by silken dresses,
The woodland breeze with many a jest is laden,
And lips are curled, and haughty heads are tossed, too,
As none could picture them but Ariosto.

ALCOHOLIC DRINKS.—Dr. J. B. Neilson expresses the following opinion upon the use of alcoholic stimulants. We offer these remarks as his opinion—not as our own. And by inserting them, we were actuated more by a desire to elicit discussion, than by a wish to enforce Dr. Neilson's views upon our readers. Our intention is to admit the views of all classes of thinkers. Milton said, "Let Truth and Error grapple; who ever knew the truth worsted in a fair and open encounter:"—"Spirits are of no use in three cases—1st. As a cordial, when the body has been suddenly exhausted of its strength, and a disposition to fainting has been induced. 2nd. When the body has been exposed for a long time to wet weather, more especially if it be combined with cold. Here a *moderate* quantity of spirits is not only safe, but may be of use to obviate debility. And 3rd. In those calamitous cases where any exercise that can be obtained is insufficient for resisting cold, wet, &c. Thus we find, in the instance of the men who were in the boat with Captain Bligh, after the mutiny of the *Bounty,* exposed for nearly a month to cold, wet, and hunger, what a powerful effect even one teaspoonful of rum daily had in fortifying them against such hardships. "But," says Liebig, "the use of spirits is *not* the cause but an effect of poverty. It is an exception from the general rule when a well-fed man becomes a spirit drinker. On the other hand, when the labourer earns by his work less than is required to provide the amount of food which is indispensable in order to restore fully his working power, an unyielding, inexorable law or necessity compels him to have recourse to spirits. He must work, but in consequence of insufficient food a certain portion of his working power is daily wanting. Spirits, by their action on the nerves, enable him to make up the deficient power *at the expense of his body*—to consume to-day that quantity which ought naturally to have been employed a day later. He draws, so to speak, a bill on his health, which must always be renewed, because, for want of means, he cannot take it up—he consumed his capital instead of his interest; and the result is the inevitable bankruptcy of his body." Another writer observes, "As to spirits being useful in warm weather, the general opinion is that whether used moderately or in excessive quantities, they diminish the strength of the body, relax the muscles, render men more susceptible of disease, and unfit them for any service in which great vigour or activity is required."

VARNISH FOR OIL PICTURES.—According to the number of your pictures, take the whites of the same number of eggs, and an equal number of pieces of sugar-candy, the size of a hazel-nut, dissolved, and mix it with a teaspoonful of brandy; beat the whites of your eggs to a froth, and let it settle; take the clear, put it to your brandy and sugar, mix them well together, and varnish over your pictures with it. This is better than any other varnish, as it is easily washed off when your pictures want cleaning again.

IMPRESSIONS OF LEAVES.—Dissolve in a saucerful of water about a teaspoonful of bichromate of potash Pass the paper to be used through this solution, and, while wet, press the leaves lightly upon it, and expose it to the sun when it is shining brightly. When perfectly dry, remove the leaves, and a *fac-simile* will be left in a light lemon shade, while the rest of the paper will be of a dark brown.

IMPRESSIONS OF PLANTS.—Take half a sheet of fine paper, and cover the surface with sweet oil; let it stand a minute or two, then rub off the superficial oil, and hang the paper in the air; when almost dry, move the paper slowly over the flame of a candle or lamp, till it is perfectly black; lay on it the plant or leaf, place a piece of clean paper over, and rub it equally with the fingers for half a minute. Then place the plant on the paper or scrap-book where it is desired to have the impression, cover it with blotting-paper, and, on repeating the rubbing, a representation of the plant will appear equal to the finest engraving. The same piece of black paper will serve for a number of impressions.

METHOD OF CAUSING CHILDREN TO CUT THEIR TEETH EASILY.—Feed them with an ivory spoon and boat—to be made thick, round and smooth at the edges. Ivory, being of the same hardness and texture as the jaws and tender teeth, the gums are not hurt or injured; but, when they are thus pressed, facilitate the teeth in their progress; whereas, the silver implements, being of a hard texture, and the edges made thin, bruise and wound the gums, and make a hard seam; so that the teeth cannot make their way direct, and, if they do cut, come irregularly; so that the operation of lancing is frequently absolutely necessary, which, of course, must prejudice the teeth, as some are exposed before the time they are fit to cut. By this method, fevers, convulsions, &c., owing to the teeth not being able to find their way through the hard seam, may be prevented. It must be often observed, that children cry much when feeding, as if ill, or disgusted with their food; whereas it is frequently owing to quite the contrary; for, being hungry, and over eager to take their food, they press hard, through eagerness, on the boat and spoon, which, being sharp, bruises and cuts the gums, and consequently causes great pain, which, by the ivory implements, will be prevented. Those who cannot afford ivory, may have horn or wood, or even pewter is greatly preferable to silver, provided the edges are made thick, round, and smooth. The wooden sort, unless they are kept very sweet and clean, on that very account, are the least eligible, and should be made, however, of box, or such hard and close textured wood as is the least liable to be tainted by the milky food.

MANAGEMENT OF A WATCH.—First: Wind your watch as nearly as possible at the same hour every day. Secondly: Be careful that your key is in good condition, as there is much danger of injuring the machine when the key is worn or cracked; there are more mainsprings and chains broken through a jerk in winding, than from any other cause, which injury will, sooner or later, be the result, if the key be in bad order. Thirdly: As all metals contract by cold and expand by heat, it must be manifest, that to keep the watch as nearly as possible at one temperature, is a necessary piece of attention. Fourthly: Keep the watch as constantly as possible in one position—that is, if it hangs by day, let it hang by night against something soft. Fifthly: The hands of a pocket-chronometer or duplex watch, should never be set backwards; in other watches this is a matter of no consequence. Sixthly: The glass should never be opened in watches that set and regulate at the back. One or two directions more it is of vital importance that you bear in mind: On regulating a watch, should it be fast, move the regulator a trifle towards the slow, and if going slow, do the reverse; you cannot move the regulator too slightly or too gently at a time, and the only inconvenience that can arise is, that you may have to perform the duty more than once. On the contrary, if you move the regulator too much at a time, you will be as far, if not further than ever, from attaining your object; so that you may repeat the movement until quite tired and disappointed—stoutly blaming both watch and watchmaker, while the fault is entirely your own. Again, you cannot be too careful in respect of the nature and condition of your watch-pocket; see that it be made of something soft and pliant—such as wash-leather, which is the best; and, also, that there be no flue or nap that may be torn off when taking the watch out of the pocket. Cleanliness, too, is as needful here as in the key before winding; for if there be dust or dirt in either instance, it will, you may rely upon it, work its way into the watch, as well as wear away the engine turning of the case.

DAMP WALLS.—Since the publication of the Hints in *Enquire Within* (309), it has been proved that thin gutta-percha paper, pasted against the walls, and then covered with the usual paper-hangings, proves an effective remedy.

MONKSHOOD.—Every one is digging up and throwing out of his garden the poisonous plant monkshood;

but care should be taken as to where it is thrown A person threw some roots on a dunghill, where they were eaten by a cow, and the cow died the same day. If left till the summer sun brings out its blossoms, they can be easily detected as growing on a tall lax *spike* of from two to three feet high, the corolla or coloured part of the flower being in general *blue*, and shaped like a *helmet* or *monkshood*, which has given rise to the English name. As the monkshood is very retentive of life, the surest way to destroy it is to burn it, or mix it with quicklime.

THE SAFE ADMINISTRATION OF CHLOROFORM.—Dr. Kidd states that there are four stages of chloroformisation. It is recommended by him to bring patients gradually under the influence of chloroform in a darkened ward rather in the noise and alarm of the operating-theatre: many deaths arising from the increased quantity of chloroform called for in operating-theatres to dull the increased sensibility, caused by increased alarm and motional excitement. Dr. Kidd believes that for the latter reason experiments on the lower animals, as rabbits and guinea pigs, do not apply to man, except in a remote and imperfect manner. The *first* stage of chloroform is marked by a giddiness and confusion of memory, but perfect consciousness of pain. In the *second* stage, as is well seen in muscular men and women, the brain seems to be influenced, and the muscular system is specifically affected, almost like hysteria or epilepsy. To this succeeds the *third* stage, or that of general want of feeling and absence of consciousness, beginning in the interior half of the body first; the peripheral distribution of the nerves of feeling and touch spread out over the upper extremities, face and head, being far more complex about the fifth and seventh nerves, diaphragm and cardiac nerves, than in the cauda equina; the sensorium itself in the third stage, becoming a *tabula rasa* for awhile from want of ideas conveyed through the consciousness. In the *fourth* stage, not always reached, but the author believes always to be apprehended, the patient faints from cardiac syncope, and where undulated chloroform vapour is used, from asphyxia, being "drowned," as it were, in chloroform vapour, not perhaps from spasm of the glottis so much as the existence of air in the lungs, deprived of oxygen. In recovering patients from this stage, artificial perspiration is not in Dr. Kidd's opinion, so valuable as cold sprinkling and turning the patient on his face and side, the reflex nerves of the face and external respiratory muscles requiring to be excited.

ALUMINIUM. —The physical properties of aluminium, the newly produced metal, are very interesting. It is ductile, malleable, an excellent conductor of heat and of electricity; its specific heat is great; its specific gravity very low (2·25); it is also very sonorous. But the chemical properties of this metal are yet more remarkable. Considering the great difficulty of detaching aluminium from the oxygen with which it is found combined, it might have been expected that immediately on its coming into contact with the oxygen of the air, it would attract that element with the utmost avidity. So far from this being the case, aluminium is scarcely acted on by any of the strong acids (except hydrochloric acid) in the cold,—neither is it attacked by sulphur. Dr. Percy has obtained interesting alloys of this metal;—of these several were exhibited, namely, with copper, tin, and gold,—one with copper at 5 per cent. of aluminium deserves notice: it laminates well, and "dips" of a fine golden colour,—the dipping liquid was nitric acid. As to the uses of aluminium, this metal is at present too costly to be employed for many purposes for which it is singularly adapted. It is, however, adopted as the material of weights for the determination of small quantities. The lightness of this metal, and its freedom from all liability to rust or tarnish, recommends it to the surgeon and the dentist? pianoforte strings are said to have been made of it;—while its property of conducting heat, its high specific heat, and the resistance it offers to corroding agents, indicate it as perhaps the best known metal for culinary vessels. But as soon as it is sufficiently cheap it will, doubtless, be employed in covering iron surfaces (such as rails, pipes, &c.) which are exposed to the atmosphere. It has been found from experiment that a clean iron surface will receive an adhering plating of aluminium.

POTATOES.—The proper season for planting potatoes is in spring. I thought I would give my experience of the way in which I have been most successful in planting them, as well as the sort to be planted (which, by the way, has a deal to do with it). I grew some acres last year on wheat stubble without any dung, dug up in the winter and allowed to lie till the beginning of April, when I commenced planting them in the following manner (the ground I should say is a very strong clay subsoil, but has been well drained 3 feet 6 inches deep):—We use a tool called a Tubal, made in Devonshire, with which we make a drill as if for peas, but about an inch deeper, the drills 2 feet apart, and then lay in the sets about 10 or 12 inches apart. After they are in draw in the drill on one side sufficient to cover the sets and leave the other side till the plant is up a fortnight; then draw in the other side, and this will be as good as hoeing. If, however, the ground is very foul, you must hoe again and heap them up if wanted. They will require nothing more done to them before they are ripe, save only the top dressing, which I sow broadcast about three weeks after they are up; 1½ cwt. guano, or not having this 2½ of superphosphate of lime will answer the purpose. Now, I have planted several sorts in this way—Regents, Kidneys, Early Oxford, and others, all of which succeeded very well, but none like the Early Oxford; they were ready to take up the latter end of July or beginning of August, quite soon enough for a crop of turnips. The yield was remarkably good, more than 130 sacks to the acre, and the mode in which we get them up is as follows:—The potatoes being planted near the surface, we have a tool like a dung fork, only turned down, with which a man can with ease get up 60 bushels a day, and being so near the surface there has not been half a bushel of diseased potatoes to an acre. The Oxford Potato keeps so much better than any other, and is best for all purposes.—*Richard Webb, Calcot Farm, Reading.*

TO OBTAIN NITROGEN.—You ask, how is nitrogen obtained, and we answer, by burning phosphorus in air enclosed in a jar over water, as in the annexed diagram. Should you wish to make the experiment of obtaining nitrogen, take a piece of phosphorus about the size of a large pea, place it in a small earthenware dish, and let it float on the surface of the pneumatic trough; then touch the phosphorus with a piece of hot wire, and cover the jar over it. You will then observe that the jar is being filled with dense white fumes, produced by the combination of phosphorus with oxygen to form phosphoric acid. When the fumes disappear you will see that the water has risen about one-fifth of the height in the jar, and the phosphorus has become extinguished, because it has exhausted all the oxygen in the jar.

LIGHTNING CONDUCTORS.—Closed windows are dangerous during lightning, because the inner sides of the frames acquire an opposite electricity to the outside, and then any conducting body is likely to concentrate the action on the inside. Metallic bodies, picture-frames, coated mirrors, bell-wires, &c., display electricity by induction, during a storm. The best lightning conductor is lead or copper, on the ridge of the roof, with perfect continuation of metal pipes into the ground.

QUEEN ANNE'S FARTHINGS—The erroneous supposition that only three of these farthings were struck in Queen Anne's reign is founded on the fact that there were some pattern or proof coins which got into circulation, in addition to the coin which was really in use. Several hundreds of Queen Anne's farthings were struck, and those bearing the impression and lettering of the then current coin are not very rare. The common farthing of Queen Anne is worth, to collectors, from seven to twelve shillings, while the pattern coins fetch from one to five pounds.

THE USE OF SILK.—Silk is an agreeable and healthy material. Used in dress, it retains the electricity of our bodies; in the drapery of our rooms and furniture covers, it reflects the sunbeams, giving them a quicker brilliancy, and it heightens colours with a charming light. It possesses a cheerfulness of which the dull surfaces of wool and linen are destitute. It promotes cleanliness, and will not readily imbibe dirt. Its continually growing use by man, accordingly, is beneficial in many ways. Grace and beauty even owe something to silk.

ADULTERATED CAYENNE PEPPER.—Everything you take in at the mouth almost, saving the pure element, water, is adulterated. The *Lancet* gives the following results of an analysis of twenty-eight samples of cayenne pepper, regarding which you write, obtained at different shops:—"That out of the twenty-eight samples of cayenne pepper subjected to analysis, twenty-four were adulterated. That out of the above number, four only were genuine. That out of the twenty-four adulterated samples, twenty-two contained mineral colouring matter. That red-lead, often in large and poisonous quantities, was present in thirteen samples. That Venetian red, red ochre, brick-dust, or some other analogous ferruginous earths, were contained in seven samples. That cinnibar, vermilion, or sulphuret of mercury, was detected in one sample. That six samples consisted of ground rice, turmeric and cayenne, coloured with red lead, or a red ferruginous earth. That six contained salt, frequently combined with rice and red ferruginous earth, or red lead. That one of the samples was adulterated with a quantity of the husk of white mustard-seed. That two contained rice only, coloured with red lead or a ferruginous earth."—(*See Enquire Within: "Adulterations."*)

THE NIGHTINGALE.—This bird arrives in England somewhere about the middle of April. The males, as in the case of the black-cap, comes several days before the females; they are very easily caught, and the lynx-eyed, quick-eared bird-catchers are immediately on the watch, so that they may secure them before the arrival of their mates; for it is a sad truth, that if a male nightingale be taken after his song has won for him a partner, he hardly ever survives in a cage; he dies broken-hearted.

MUSCULAR EXERCISE.—Much care should be taken in setting down the feet. Let the outer edge of the heel first touch the ground, and the sole of the foot bear and project the weight of the body. The length of step is to be determined by the length of limb. Efforts at taking long steps, out of proportion to the power of motion, are always ungraceful. Reckoning from heel to heel, or toe to toe, the length of a military step at drill march is thirty inches, which is considerably more than the length of ordinary steps in walking. The length of step at a moderate pace of a man five feet nine inches high is usually twenty-four inches; and this will be found a convenient length to acquire the habit of using. The motion of the arms too and fro, in cadence with the movements of the legs, greatly helps the locomotion, and is advantageous in exercising the muscles of the shoulders, and expanding the chest. The motions of the arms, however, should be on a moderate scale, the hands not swinging through a greater space than eight or nine inches, before and behind the leg. The practice of working forward the shoulders and swinging the arms at a great rate is most odious. It may be added, that the art of comporting the hands, keeping them down, or from meddling with the person, is one very necessary in polite behaviour, and should be acquired by all young persons, before bad habits are confirmed.

LONGEVITY OF QUAKERS.—The reasons are obvious enough. Quakers are temperate and prudent, are seldom in a hurry, and never in a passion. Quakers, in the very midst of the week's business (on Wednesday morning) retire from the world, and spend an hour or two in silent meditation at the meeting-house. Quakers are diligent; they help one another, and the fear of want does not corrode their minds. The journey of life to them is a walk of peaceful meditation. They neither suffer nor enjoy intensity; but preserve a composed demeanour always. Is it surprising their days should be long in the land?

BATHING.—Too much fatigue in the water weakens the strength and presence of mind necessary to avoid accidents. A person who is tired, and remains there without motion, soon becomes weak and chilly. As soon as he feels fatigued, chill, or numbed, he should quit the water, and dry and dress himself as quickly as possible. Friction, previous to dressing, drives the blood over every part of the body, creates an agreeable glow, and strengthens the joints and muscles.

PRESERVATION OF HEALTH.—Our correspondent should refer to the various rules we have given in the *Enquire Within* on this important subject. Sir William Paulett, who died in the reign of Queen Elizabeth, at the age of ninety-seven, gave the following answer to a person who had inquired how he had preserved his health:

> "Late supping I forbear:
> Wine and excesses I forswear:
> My neck and feet I keep from cold:
> No marvel then, though I be old:
> I am a willow, not an oak;
> I bend, but never hurt with stroke."

PRESERVATION OF THE TEETH AND GUMS.—The teeth are bones, thinly covered over with a fine enamel, and this enamel is more or less substantial in different persons. Whenever this enamel is worn through by too coarse a powder, or too frequently cleaning the teeth, or eaten through by a scorbutic humour in the gums, the tooth cannot remain long sound, any more than a filbert-kernel can, when it has been penetrated by a worm. The teeth, therefore, are to be cleaned, but with great precaution; for, if you wear the enamel off faster by cleaning the outside than nature supplies it within, your teeth will suffer more by this method than perhaps by a total neglect.

GLASS AND CROCKERY.—Crockery and glass, to be used for holding hot water, are best seasoned by boiling them, by putting the articles in a saucepan of cold water over the fire, and letting the water just boil; the saucepan should then be removed, and the articles should be allowed to remain in it till the water is cold. Some kind of pottery is best seasoned by soaking in cold water. Choose thin rather than thick glasses, as the thin glass is less likely to be broken by boiling water than that which is thicker, for thin glass allows the heat to pass through it in least time. The safest plan is to pour boiling water very slowly into cold glasses. As boiling water will often break cold glass, so a cold liquid will break hot glass; thus wine, if poured into decanters that have been placed before the fire, will frequently break them. Glass dishes and stands made in moulds are much cheaper than others, and they have a good appearance, if not placed near cut glass. Lamp glasses are often cracked by the flame being too high when they are first placed round it; the only method of preventing which is to lower the flame before the glass is put on the lamp, and to raise the flame gradually as the glass heats.

POLISH FOR DINING TABLES—Is to rub them with cold-drawn linseed oil, thus: Put a little in the middle of a table, and then with a piece of linen (never use woollen) cloth rub it well all over the table; then take another piece of linen and rub it for ten minutes; then rub it till quite dry with another cloth. This must be done every day for some months, when you will find your mahogany acquire a permanent and beautiful lustre, unattainable by any other means, and equal to the finest French polish; and if the table is covered with the table-cloth only, the hottest dishes will make no impression upon it; and when once this polish is produced, it will only require dry rubbing with a linen cloth for about ten minutes, twice a-week, to preserve it in the highest perfection; which never fails to please your employers; and remember, that to please others is always the surest way to profit yourself. If the appearance must be more immediately produced, take some furniture paste.

IMITATION CORAL.—An ingenious person can make up with artificial coral a great variety of useful and ornamental articles, such as work-baskets, liqueur bottle-stands, card-racks, candle ornaments, &c., all of which have a novelty in appearance, and are at the same time very pretty. To prepare this coral, procure small branches of shrubs, peel the bark off, and dry them; they are to be dipped in melted red sealing-wax; to every quarter of a pound of which should be added, prior to the melting, one ounce of bees'-wax, which will render the mixture, when cold, less brittle than sealing-wax by itself. Twigs of the black thorn are the best kind of wood to employ for this purpose. Small articles should be fashioned before they are dipped, but larger ones require the twigs to be dipped first. After they are finished, they should be held before a gentle fire, turning them round till they are perfectly covered and smooth.

FLORAL SPECIMENS.—The mode of preserving leaves is simple. Take two leaves of every kind you wish to keep; lay them inside of a sheet of blotting paper, place them under a considerable pressure, and let them remain during the night. Open them the next morning, remove them to a dry part of the paper, and press them again for the same space of time. They may then be placed in the book intended for the purpose, and fastened down with a little gum, with the alternate sides turned out, and the name written, with such other observations as the artist may think proper.

WEAK EYES.—The following directions will be of service to our readers generally:—1. Never sit for any length of time in absolute gloom, or exposed to a blaze of light, and then remove to an opposite extreme. 2. Avoid reading a very small print. 3. Never read by twilight, nor by fire-light, nor, if the eyes are disordered, by candle-light. 4. Do not permit the eye to dwell on glaring objects, particularly on first awaking in a morning. 5. Long sighted persons should accustom themselves to read with rather less light, and somewhat nearer to their eyes, than is naturally agreeable, while the short-sighted should habituate themselves to read with the book as far off as possible. 6. Nothing preserves the sight longer than a moderate degree of light; too little strains the eyes, and too great a quantity dazzles and inflames them. 7. Do not wear other spectacles than your own, to which your eyes have accommodated themselves.

MOURNING.—It was different in different countries. Among the ancients, mourning was expressed by various signs: tearing their clothes, wearing sackcloth, laying aside ensigns of honour; thus Plutarch, from the time of his leaving the city with Pompey, neither shaved his head, nor, as usual, wore the crown or garland. Amongst the Romans, a year of mourning was ordained by law, for women who had lost their husbands. The colours of the dress or habit worn to signify grief vary in different countries. In Europe, the ordinary colour for mourning is black, which, being the privation of light, is supposed to denote the termination of life. In China it is white, the emblem of purity, which colour was the mourning of the ancient Spartan and Roman ladies. In Egypt it is yellow, which, representing the colour of leaves when they fall, and flowers when they fade, signifies that death is the end of all human hopes. In Ethiopia brown, which denotes the earth to which all the dead return. In Turkey blue, which is an emblem of the happiness which it is hoped the deceased enjoys. Kings and cardinals mourn in purple or violet, which is supposed to express the combination of sorrow and hope. The custom of mourning for the dead in shrieks and howlings is of great antiquity, and prevails almost universally among the followers of Mahomet.

PEA-LEAF SOUP.—From what has been stated in your pages (see p. 56), we have been induced to try this. Our first and second attempts did not come up to our expectations. The second was however an improvement on the first so far as colour and flavour were concerned; the only deficiency was substance, and that I am happy to say we successfully obtained in the third attempt. At the suggestion of a first-rate cook we boiled a small quantity of a blue variety of pea (the Prussian blue), put them through the tammy, mixed the two well together, and the pea soup for colour, flavour, and body could not be surpassed even by midsummer productions. A quantity sufficient to serve a party of 14 can be raised at the expense (labour and space included) of from 2s. to 2s. 6d. One quart of the strong growing varieties is enough for sowing, and a half of pint of Prussian blue or any other blue variety of peas to boil separately. Mint ought not to be used; the less artificial it is the better. —*Pea Green, Herefordshire.*

JOHN GILPIN.—There is at present a discussion being carried on in some of your contemporaries as to whether the story of John Gilpin, "of credit and renown," was an entirely fictitious romance, or whether Cowper founded his poem upon an event in the life of a real personage. In making some researches in the *Gentleman's Magazine*, I think, about a week ago, I came accidentally upon a notice to this effect:—"Died this day, at ——, Mr. ——, celebrated for his indifferent horsemanship, under the name of John Gilpin." The notice, to the best of my memory, was about twelve lines in length. I have since vainly endeavoured to find the passage. Had I been aware of the controversy now pending, I should certainly have made a note of it at the time. Of this much, however, I am certain, that the short memoir alluded to distinctly affirmed and established (*i. e.*, as far as it was trustworthy) the fact that the celebrated John Gilpin was a historic personage. As I cannot find the passage in the Index of the *Gentleman's Magazine* under Gilpin, I conclude that Gilpin was not the real name, but only the appellation which Cowper assumed for the occasion. —I am, &c., JOSEPH B. M'CAUL. Library, British Museum.

[The foregoing was addressed to the editor of the *Athenæum*, and published by him. The notice of the death of the reputed "Johnny Gilpin" will be found at p. 60 of the "Journey."]

TO PAINT THE GLASSES OF MAGIC LANTERNS.—Draw on a paper the subject you desire to paint. Lay it on a table or any flat surface, and place the glass over it; then draw the outlines with a very fine pencil in varnish mixed with black paint, and, when dry, fill up the other parts in their proper colours. Transparent colour must be used for this purpose, such as carmine, lake, Prussian blue, verdigris, sulphate of iron, tincture of Brazil wood, gamboge, &c., and these must be tempered by a strong white varnish, to prevent their peeling off. Then shade them with black or with bistre, mixed with the same varnish.

TO CLEAN MOREEN CURTAINS.—Having removed the dust and clinging dirt as much as possible with a brush, lay the curtain on a large table, sprinkle on it a little bran, and rub it round with a piece of clean flannel; when the bran and flannel become soiled, use fresh, and continue rubbing till the moreen looks bright, which it will do in a short time.

EFFECTS OF FASHIONABLE BONNETS. — An eminent medical gentleman in London, writing to a friend in Bristol, says:—"I have to lament the great increase, among the female part of my practice, of tic doloureux in the forehead, loss of sight, and great suffering in the ear, induced, I firmly believe, from the present absurd fashion of wearing bonnets on the neck, instead of the head. During the past month I have been in attendance upon two young ladies with the tic-doloureux in the forehead, and several others with similar complaints It is high time that the frivolous bonnet of the present day should be done away with."

GARDENING FOR APRIL.

The Flower Garden. — Let the principal sowing of hardy annuals be made immediately. The ground being dry, let the surface be neatly raked; then divide it into beds forty inches wide, and with the back of a rake turn the earth, to the depth of an inch, off from the surface of the bed into the alley; then let the seeds be carefully scattered on the surface, each sort separated, and then with the teeth of the rake draw the earth that was turned off the bed evenly over them.

Carnations and *Picotees.*—Pot them in No. 8 or No. 12 sized pots; put two inches of crocks at the bottom; then a quantity of mould, got ready in February, and turned over weekly since. Let them be in a sheltered place, and be carefully looked after. All those that cannot be potted for blooming should be planted in good rich soil.

Pansies. — Stir the earth between them; top-dress with cow-dung well decomposed; water freely; shade the opening bloom from the scorching rays of the sun; bed out any that are in pots and want growing out of doors.

Tuberoses require heat to bloom them in perfection; they may be grown the greater part of their time in a hotbed, but when they shoot up for flowering they require six feet of height, and nothing but a warm house will do.

Dahlias.—Now put the general stock of old roots to work, if you have not done it before. If you are only going to divide the roots, cut a piece of root to every eye, and pot them to grow slowly till planting time. Sow dahlia seed in wide-mouthed pots, in a hot-bed.

Tulips.—Use more diligence than ever to keep them from frost; as they advance they are more susceptible of check, and consequent injury to the bloom.

Ranunculuses. — Stir the earth between them, and break it small; close it carefully about the roots, and water freely.

Take cuttings of all the ordinary clump and lawn plants, unless you struck them in the autumn.

Potted plants should be cleared of their dead leaves, the surface mould removed, and be fresh earthed-up with good rich compost; and when the pots are very full of roots they should be exchanged for pots of larger size.

Annuals of the more hardy kind may be sown in the borders. Tender annuals may be sown on a slight hotbed. Hardy ones, which have been wintered in frames, may be planted out towards the end of the month, where they are to bloom.

Polyanthuses should have abundance of water; and any in the beds required for exhibition should not be potted up without first soaking the ground as far as their roots go, and a large wet ball will come up with the roots, easily transferred to a proper sized pot; they should be taken up the day of show, and not before. Prick out seedlings as soon as they are large enough.

Auriculas are now rising for bloom fast. If the pips in a truss are crowding each other, take out some of the smallest and weakest, leaving about eight to perfect themselves; when they show colour they must be removed to a shady situation, covered with hand-glasses, and shaded from the sun. Keep the pips from touching each other, by tucking soft moss or cotton lint between the footstalks, that they may have room to open well. Sow seed.

Chrysanthemums must be constantly shifted, and the ends of the roots taken out when they get three inches long.

Biennials and *perennials* must be planted out where they are to flower, and seeds of all the sorts be sown.

Hyacinths in flower should be shaded and protected from sun and rain; it will greatly prolong their period of bloom.

Kitchen Garden.—*Sea-kale.* — Sow the seed in a small bed, and cover an inch; refresh with water when it gets too dry.

Rhubarb.—If you raise this from seed, now is the time to sow it, in rich strong soil.

Radishes.—Continue to sow if you require them for use. The turnip kind will do well now. Protect as before.

Savoys, *brocoli*, *Scotch kale*, and *Brussels sprouts* should be sown this month, about the middle, if the weather suit; let the bed be well dug and dressed for them.

Herbs of all descriptions should be slipped or parted, and planted to make fresh beds. Sow parsley if not already sown.

Peas should be sown once a month, or even twice, according to the consumption; use some of the large sorts.

Onions.—Sow the main crop. Let the ground be well dunged and dug, and sow as before.

Lettuce.—Sow more lettuce, and plant out any that are large enough.

Beans also, if required, should be sown again, as soon as the last sowing has got the second pair of leaves open. Earth up those that are growing.

Turnips.—Sow a few, and then thin out, as soon as they have two rough leaves, leaving them six inches apart.

Carrots.—Sow a few more, as last month, early horn kinds.

Cucumbers.—Look well to the heat of the beds, and attend to lining them with hot stable dung when they decline; regulate the shoots of the plants as they grow, and do not let any plant have more than three fruit swelling at once.

Kidney Beans.—Sow in rows two feet apart, and the seeds four inches from each other.

Scarlet runners may be sown in a patch for planting out, or in the rows where they are to grow.

Spinach.—Sow as before; hoe, weed, and thin that already up, leaving it six inches apart.

Cabbages.—Plant out any that are strong enough. Thin those on the seed-beds, and prick them out to strengthen. Sow again for a succession, for it is a useful crop.

Cauliflowers. — Plant out, in good ground, some of the plants kept over the winter, and give plenty of air to those under glasses.

Parsnips.—Sow in a patch for planting out, or broadcast, to thin out; the former answers very well.

Vegetable Marrow.—Sow in heat; a few plants will suffice, therefore half a dozen seeds will do.

Hoeing and thinning crops, weeding, planting out greens that are large enough, &c., go on as usual.

A FEW FACTS ABOUT PARAFFINE.

Of the many uses to which petroleum and its derivatives are applied, that of illuminating is the most important, and the process of refining it is extremely simple. The crude rock oil, as it is frequently called, is put into a large iron retort, connected with a number of iron pipes, surrounded with cold water, to form a condenser. Heat is then applied to the bottom of the retort, when a light-coloured liquid of a strong odour soon after flows off from the open extremity of the pipes or condenser. This first product is naphtha, and is very inflammable and highly explosive. After the naphtha has been expelled, the heavier or burning oil passes over. Steam is now forced into the retort, and the thick, heavy oil used so extensively for lubricating railway carriage wheels and machinery is slowly driven over, leaving in the retort a black oily substance, sometimes used as a grease, and a dark compact mass employed as a fuel.

If the naphtha, however, is again distilled, it is separated into a very valuable article, called BENZOLE, for it dissolves fat, resin, india-rubber, gutta-percha, and many other substances. If a stream of air is driven through benzole, the air becomes so inflammable, that when lighted it burns with a brilliancy exceeding that of gas. The burning oil for the lamp is at first of a deep yellow colour; to purify it and render it colourless it is placed in leaden cisterns, first treated with sulphuric acid, then with soda lye, and finally shaken up with water. The heavy lubricating oil mixed with grease is in immense demand by engineers. The black oily residue is the source from whence are derived the beautiful colours of mauve, magenta, rosaline, &c.

"THAT LAZY FELLOW."

We never read anything more likely to stir up the energies of the dormant than the story we are now about to give. It's just the thing we would put into the hands of a dull boy, if we had a lazy one. Or we might get its spirit by heart, and act the part of the bustling doctor. This story was first printed in an American magazine, and afterwards reprinted in an English periodical, some years ago. But it cannot now be found anywhere in a convenient form. We therefore give it, with little alteration or abridgement. If the reader knows a "lazy fellow," whom it is desired to wake into the energies of life, send to him this number of the "Journey," putting a broad ink mark under "That Lazy Fellow." He'll be sure to read it, and if it doesn't rouse him, he must be worse than Theophilus Briggs!

I am sorry I have undertaken to say anything about Theophilus. Not that I am afraid he will read this, and attack me with a stick. No danger. Theophilus never opens a magazine—rarely ever opens a newspaper, and when he does he only reads the anecdotes. Besides, I don't intend to name where he lives. There is no danger. Even if the bookseller reads the *Companion*, and sends for Theophilus and shows it to him, and urges him "not to stand it," he is too lazy to get angry; or if it does, he is far too lazy to attack any one.

No! the reason I am sorry I undertook to say anything about him, is because there is so very little I can possibly say. There is no use in attempting to say anything about his father. It is true he kept shop, and sold marbles to me when I was a boy, and was in the militia. I have racked my memory, and cannot recollect anything concerning him except that he sold tape, and nails, and calico over his little counter, as far back as I can remember, without one single incident which I can possibly dress up into an interesting narration.

As to Mrs. Briggs, she was simply, solely, and only Mrs. Briggs, and that is literally *all* I, or anybody else, ever knew about her. She made a new bonnet and two new calico dresses for herself every year, made and mended the clothes of Mr. Briggs and Theophilus, ground the coffee, baked the biscuits, and occasionally the cakes, helped a neighbour to work, suckled Theophilus when he was a baby, thrashed him when he was a boy, and knocked upon the partition (Mr. Briggs's family lived in the back part of his shop), when dinner was ready. Love and marriage are always interesting, and if I knew anything about theirs I would relate it, even if I had to add a little fiction in the way of an opposing father, or a wonderful rescue of Mrs. Briggs, that was to be, by Mr. Briggs from some mad dog or runaway horse, or something or other. But nobody ever knew or said anything about their marriage. I suppose they went to school together, and grew up together, and got married together, so much as a matter of course as not to excite any stir at all in Pikesville—yes, I will call our town by that name, for there is no use wounding, or running the risk of wounding, Theophilus's feelings.

Much more has now been said about Mr. and Mrs. Briggs than I thought could possibly be said; so I feel encouraged to go on and speak about their only son.

I might have described the death and quiet funeral of his father, and how his mother followed his father to the little graveyard just three months after that funeral. But I forbear. Easy, unoffending, kind-hearted in their lives, they sleep peacefully together. If they did and said nothing else during their lives, they, at least, injured no one, and it is a vast deal better the world should be peopled with such people, than with active, but wrangling and hard-hearted couples.

I want to dwell on the loveable qualities of Mrs. Briggs as a mother—for there is something to me actually *holy* in the character of a *mother*, apart from all other qualities of the female. Yet I cannot conscientiously do it in her case. True, she suckled Theophilus and Lucinda his sister, and slapped them when they cried, and gave them cakes when they stopped crying, and nursed them when they had eaten too much cake, or had the hooping-cough. All this is true, but it is only what the mere animal mother has instinct to do. At this moment, you might ask Theophilus or Lucinda, and they could not tell one single thing done by their mother to improve their minds, or waken their immortal souls to the knowledge of immortality.

She did teach Lucinda a peculiar way of preparing peaches, so that they answered either for preserves or pickles, having a remarkable half-sweet, half-sour taste, but I believe this is all, except, of course, that Lucinda learned from her how to cut out, and sew, and cut candle-papers. This was all she received from her mother beyond her mere existence.

Theophilus had his father's fat figure, red hair, and every-day sort of face, inherited his father's little shop, his father's habits of opening the shutters late in the morning, breakfasting late in the back room, sitting on a tea-chest in front of the door, or by the little stove in the shop, as it happened to be summer or winter, all day cutting a stick, or chatting with somebody. If a customer came in, he rose slowly, clasped his pocket-knife by shutting it against his thigh, slipped it in his pocket, went round the counter, weighed the sugar wanted, or measured off the gingham, just like a man who had plenty of time to do it in.

Lucinda inherited her mother's realm in the back-room, and kept up the rapping when dinner was ready, as it had been kept up for the last forty years by her mother. I always thought her superior to her mother. She was rather pretty, medium size, lively black eye, red lips, rosy cheek, loving heart—only needed the mind within her to be lighted, to glow and sparkle, and be a lovely and fascinating girl. Apparently, however, the very same path lay before her as before her mother;—grinding coffee, baking tarts, making pickles, making garments, mending socks, and combing her hair, seemed to be literally and absolutely *all* that lay before her through life, with some slight change as to the maternal duties of nursing in case she married.

From Monday till Saturday, every day seemed to be a mere repetition of the preceding one. On Sunday they went to church regularly; but I do firmly believe that they always returned without the increase of a single idea—at least, of any one strong enough to waken and move them on a higher course of thought, and feeling, and action.

Everybody in the town—there are about four hundred persons in Pikesville—liked Theophilus and Lucinda well enough; but the brother was hardly ever mentioned, without the adjective lazy attached. "That *lazy* fellow, Theophilus Briggs," was his usual designation. It was only a few days ago, when I was attending on Mrs. Milson,—for I am a practising surgeon in Pikesville,—that I overheard Mrs. Jones tell Mrs. Smithers, who had also dropped in to sit up with Mrs. Milson, that Mr. Briggs was heard to express himself more strongly in admiration of her—Mrs. Smithers'—daughter Jane, than was altogether consistent with mere admiration.

"Well, what then?" said Mrs. Smithers —I thought rather tartly.

"Why, nothing," replied Mrs. Jones, "except that Theophilus is old enough to marry."

"Do you think I'd let my Jane marry that lazy fellow, Theophilus Briggs?" said Mrs. Smithers, in a half-scream, loud enough to waken my patient.

I could not stand it. My surgery is right opposite Briggs's shop, and I have seen so very much of him sitting on his tea-chest, that I felt myself to be more acquainted with him than anybody else. I am only going to stay a few months longer in Pikesville, to gain a little more reading and practice in my profession, and then I intend going to a wider field; and so I determined I would take the first opportunity to talk with my neighbour—see if I could not benefit him a little. I think it was the Memday after that that I did so. I had that morning operated for *strabismus* on Henry Milson's left eye—had read hard upon the operation, both before and after it—had ridden over to Squire Smithers', and got back—had drawn my dentist chair near the window to read a little more upon Mrs. Milson's very delicate diagnosis, when I saw Theophilus sitting as usual on the box opposite. No one was with him. I laid aside my book, went out, locked the door, and went over, determined to spend the hour before the bell rang for supper, in talking to Theophilus.

In order not to make too sudden an attack, I drew out my knife as I slowly sauntered over, took a seat by Theophilus on the box, split off of it a splinter to chip, and chatted a few minutes about the warm, beautiful weather we had.

"There is something," said I, "in this bright, blooming weather, that warms one through and through. It is like spending an hour with Jane Smithers to have an hour of such sunshine."

My figure was not extravagant. I have been married two years, and, besides, Jane is so lovely and intelligent, and warm-hearted, and laughing a girl, that to call her embodied sunshine is a compliment to the sun, not to her!

I saw I had hit the nail on the head. Theophilus coloured, and looked up with more life in his eye than I had ever seen before.

"Think so?" said he.

"I'll tell you what it is," said I, "that girl is a prize. She deserves to marry a *man*. All her sunshine would be lost on anything else."

"Don't understand," replied my companion, rather earnestly.

I had no time to lose, for the sun was getting low—so I came right to the point. Nothing but a hearty slap will waken a sleepy-headed man.

"Theophilus," said I—and I glanced at the well-formed head and open countenance of the man, and saw he was worth talking to, notwithstanding his drooping shoulders and listless habits. "Theophilus," said I, putting my hand on his shoulder, "I know you love Jane: I know you won't get her, unless you change very much in some things. I am going to leave here in a short time, and I want to have a plain talk with you before I go, because I like you. You won't be offended?"

"No."

"You have one grand fault. It has wrapped itself all around you like a boa-constrictor—which you saw in the show here last March. It is sliming you over with its saliva, and will swallow you up presently, before you know it."

"What do you mean, Doctor?"

"Just exactly this: you are *lazy*—daily becoming more so."

"Well, fact is, I believe I am, but I don't see why I should slave myself. I make enough for me and Lucinda to live on. And if I ever *do* marry"—here he coloured—"I dare say something will turn up. Everything is cheap. I will have a plenty to live on."

Phidias cut a Venus out of the quarries in Mount Hybla. Here was a rougher, deader quarry, to get a perfect man out of.

"You were created by God?"

"What a question?"

"Well, He is working out some great plan in the millions that have trod, are treading, and will tread the earth. He don't create these millions *by millions*, but individual by individual, giving each man his peculiar duty in the world. He made *you* to do something—or He would *not* have made you at all—there would have been no object in it."

"Very well."

"You see, no man was created to be nothing and do nothing. Every man has his own business, and it is his duty to God to do all he can, to the utmost of his strength in that business—for God as loudly commands you to be not slothful in business, as He does not to steal, lie, or murder."

"I see!"

"There are many different sorts of business in this world. It is by division of labour that each is carried on; just as in a large printing establishment: one class of workmen have the sole duty of preparing the paper; another the duty of setting the type; another the duty of passing the sheets through the press; another the duty of receiving them from the steam-driven cylinders; another the duty of taking them, thus completely printed, and folding them for the post or for binding. You see, by the energy of each class, and of each individual of each class, the whole work moves with order and speed, scattering printed sheets over the reading world. Whether a man plough, or plead law, or act as legislator, or sell goods, or doctor, it is only when a man throws his whole force into his peculiar business that he does his duty. Every blow of Peter's hammer down yonder in the blacksmith's shop, every piece of business you do, every visit I pay as a doctor, has a double object, you see—individual profit and general improvement—at least it ought to have. Well, then, every wasted moment, every half-effort of any man, is just so much lost—lost to the man himself—lost to the public. Every one of us has his business—every man's work in that business has a certain value. Every hour, then, you waste on this box in lazy trifling, not only confirms you in the disease of indolence, not only habituates your mind to idle thought and talk—but every such an hour is an actual and deliberate theft of just so much value as that hour spent in work would have yielded—a theft from your own fortune, Theophilus, and a theft from the public."

"Every man has his place, Doctor. Mine is a mighty little one. Not much to be done in it!"

"Yes, but do you do with all your might *all* you can possibly do in it?"

"Why, no; I might do a great deal more business if I would, but I do enough to make a living; that's all I want."

"Ah, but what do you mean by a *living?* The living a rational man ought to live, is not only to have plenty of food and clothing, but plenty of books and papers for the living of his mind—pictures and statuary too, where it can be afforded. You ought to be active too, if it was only not to set an example of laziness—if it was only to stir everybody all around you into greater energy and enterprise by your example. Besides, you ought to get rich as fast as you can—if it was only to increase your power of doing good."

"Doing good? Pshaw, you are preaching!"

"Yes, doing good. If you were rich you could educate orphans, build asylums and colleges. If you had five thousand pounds to spare, and the soul to give it, you might build up a free school in this very town, which would give all the children a good education, and refine and improve the place beyond anything you can think. If you," continued I, "had spent those hours in some business which you have spent in lying on this box doing nothing, you would be able to do it now—and would thus have made yourself a blessing to the town for ever!"

My lazy friend here clasped his everlasting knife and put it in his pocket. It was a good ómen. "Theophilus," said I, standing in front of him, "consider, will you, my dear fellow, what a tremendous mass of work is upon all men now? The generation passing away is leaving to us the world-wide business which has strained its efforts to the utmost. The cultivation of the immense raw material consumed in the ten thousand manufactories of the world, is passing from their hard hands into ours. The machinery of these ten thousand manufactories has to be kept up in uninterrupted speed. The innumerable roads and vessels by which the commerce of the world is carried through it; the million inventions by which cities are lighted with gas, by which thought is flashed on lightning around the world, by which all surgery is performed without pain—pshaw! you know all the thousand new inventions, from a new plough to a new telescope—all these have to be kept up in full use."

"But, Doctor—"

"Wait a moment!—our Government has to be kept up, too, in all its branches—made to do more and more for its own citizens—more and more for the freedom of the old world. What a vast amount of legislating has to be done! and what a vast deal of voting; and of reading, and thought, that the voting may be intelligent and good! The vast system of education, too, has to be kept up. All the thousands of schools and colleges have to be kept supplied with able teachers."

"Don't know what you mean."

"I mean that our generation inherits the work of the six thousand years since creation—has to keep it up in full vigour. Besides, millions of acres *more* have to be brought under cultivation. Thousands of manufactories *more* have to be established. Thousands of new steamships have to be built. Thousands on thousands of miles of railroads and telegraphs have to be added to those now in use."

"Plenty of work to do, I'll acknowledge."

"That's not all; all the thousand new evils of this new age have to be held down and strangled. Intemperance has to be banished; quackery in science and politics has to be unmasked and killed. The world, my dear fellow, has a vast deal to do, and a vast deal of evil to be kept from doing."

"But *I* haven't to do all this!"

"Very true; but suppose everybody was to sit on his tea-chest and say the same; would anything be done then?"

My lazy friend put an almond in his mouth, and slowly cracked it, as he meditated my question.

"Theophilus," continued I, hoping the glacier of his mind was slowly detaching itself under the warmth of my eloquence, and was about to move.—"Theophilus," said I, "tell me; what have you *done* since your father died?"

"Well, I have sold goods, and chatted with the neighbours, and—and gone to church on Sunday, and—and—and that's all, I believe!"

"Except eating your meals and sleeping, and sitting out here in the sun, without a bit more real thought than occupies a bullfrog squatted on a log. You said you wouldn't get angry, you know," said I; and I laid one hand on each of his shoulders, and looked him steadily in the eyes, while I continued, with all the earnestness I was capable of—"Theophilus, in that head of yours there sleeps a mind which you might waken to think and will, in such a way as to make you a blessing to yourself and everybody. In that breast of yours there slumbers a heart, which might be roused to such a love to God and man, as would warm you and all around you through and through! You might *do* so much more; you might be so much happier if you only would. I hate to see you live on in such idleness. Why, I would almost as soon see you lying in the gutter there, in the mud, all the time. Why, man, you are a living corpse! There is almost as little stir about you—you do almost as little in the town, as if you were in the graveyard, instead of your shop. This tea-chest is your coffin; you are just as useless, sitting idle *on* it, as if you were lying dead *in* it."

"I believe you are half right, Doctor."

"I am *whole* right. Just look at it. If you were only to devote every hour to doing something—enlarging your business, or improving your mind by reading, or doing something or other, it doesn't matter what, so that it be *something!*—the habit of activity would grow upon you; your business and your money would increase; your mind would act more the more you used it; your heart would warm; you would be a new man. You would feel like a healthy man after a brisk walk on a cold bright morning—cheerful, hearty, happy. You would enjoy your very meals more. You would be far more respected. You would become, at least, very well off. You would be able to marry Jane; for I believe she loves you in spite of your present laziness, though she would have the sense never to marry you, even if her mother would let her, while you are what you have been all along. You could build up a bright and happy home. You could hope to be elected to any office almost, in the land. You see, a broad and indefinite course of usefulness, and honour, and happiness is before you, if you will only waken out of the mud of your sloth, and think, and act, and live !"

Theophilus had risen from the box, and stood before me really awakened. That picture of Jane and housekeeping touched him.

"You may be as happy and as prosperous as you please, by being active. You will sink lower and lower into brutal sloth, by being—just as you are. You ain't thirty years old, Theophilus," continued I: "if now, in the spring and heat of young blood, you are so lazy, what on earth will you be when you get older? What on earth but a poor, miserable, idling, drivelling, chattering, good-for-nothing old bachelor, rotting before you are dead; your soul dwindled and dead within you, like the kernel of a frost-bitten peach?"

"Strikes me, you talk plain enough, doctor?"

"Have to shout when one talks to the deaf! have to cut and slash when the limb is mortified; have to apply mustard plaster where we want action to follow."

"Well, doctor, what would you have me to do?"

"Do? Why, split this tea-chest into kitchen wood; rise two hours earlier to-morrow morning; subscribe this evening for a good newspaper and a magazine; clean out your shop, and paint it, and fill it with goods, and advertise. When you do talk, and when other people talk with you, talk yourself, and make them talk about *something*. When you go to church, listen to every word sung, or prayed, or preached, if it be only for the sake of keeping your mind busy. You are in a comatose state—stir about with all your might, or your lethargy will become fixed."

Here the bell rung for supper, and I arose.

"Much obliged for your visit, doctor; believe I'll take your mustard and medicine—don't know—I'll see."

"Shall, if I can make him!" said Lucinda, who had been sitting near the door inside, listening, with female curiosity, to our talk, but keeping unseen and still. As she spoke, she came to the door. Her eyes were really awake, her cheek flushed, and I knew my visit had not been lost, at least, upon *her*. I could see the Venus starting out from the block!

"Good bye, doctor," said both, as they shook me warmly by the hand, which was unnecessary, as I was not going to be absent from town. I answered cordially, and walked slowly away. The sun was just down. "Rose at four," murmured I, recalling the events of the day; "read two hours; did that *strabismus* case; rode over to Squire Smithers'; read up Mrs. Milson's case; had a talk with that lazy fellow, Theophilus. Put *that* down in note-book among my 'Cases in Pikesville,' as 'Case of Mental Catalepsy;' write out treatment—*Watch Effects*."

COBBETT'S OPINION OF WOMEN — Women, so amiable in themselves, are never so amiable as when they are useful; and as for beauty, though men may fall in love with girls at play, there is nothing to make them stand to their love like seeing them at work.

"AH, Sambo," said a sick planter to his attendant nigger, "I fear I'm going, and I've a long journey before me." "Neber mind, massa," was the encouraging answer, "it's all down hill."

THE ART OF CONVERSATION is the finest of the fine arts; it is not the art of saying much, but of saying well. There are preaching men who talk, but listen not; or who speechify in private; or gossipping men, who think little, and are never still, and yet they are not conversible men. The real art of conversation consists, not only in expressing your own thoughts freely, but in drawing out by encouragement the thoughts of others. You will never be liked for long-talking, by anybody; but you are sure to be liked if, by your talking, you encourage and stimulate others to think and talk in response to your thoughts. The art is a natural gift in the main. It is not only a gift of mind but also of temper. It requires condescension, indulgence, patience, and many other moral accomplishments, refinement as well as power.

JOURNEY OF DISCOVERY ALL ROUND OUR HOUSE.

Journey Third.

FURTHER DISCOVERIES RESPECTING THE INHABITANTS OF OUR HOUSE.

We have described those muscles which produce, under the direction of the nerves, the motions of man; and we will only say further at present that there are two sets of muscles, acting in unison to produce various motions; they are known by the terms of *flexors* and *extensors;* the one enables us to bend the limbs, the other to bring the limbs back to their former position. The flexors enable us to close the hand, the extensors to open it again. The flexors enable us to raise the foot from the ground; the extensors set the foot down again in the place desired. Now consider for a moment the nicety with which the powers of these muscles must be balanced, and the harmony which must subsist between them in their various operations. When we are closing the hand, if the extensor muscles did not gradually yield to the flexors—if they gave up their hold all at once—the hand, instead of closing with gentleness and ease, would be jerked together in a sudden and most uncomfortable manner. If, in such a case, you were to lay your hand with its back upon the table, and wish to close the hand, the fingers would fall down upon the palm suddenly like the lid of a box. Again, consider how awkward it would be in such a case. Our walk through the streets would become a series of jumps and jerks; when a man had raised his foot, after it had been jerked up, there it would stand fixed for a second before the opposite muscles could put on their power to draw it down again. This case is not at all supposititious. There is a derangement frequently observed in horses, in which one of the set of muscles becomes injured, and we may frequently see horses suffering from this ailment, trotting along with one of their legs jerking up much higher than the others, and set down again with much difficulty, just in the manner described. Again, a most familiar illustration is afforded by the cases of persons who squint. The eye is held in its sockets by muscles which regulate its motions. These muscles are placed on the opposite sides of the eye. Those on the left side draw the eye to the left, and those on the right side to the right. Now when a person squints, it is because the muscles on one side of the eye are too powerful for those on the other side, and the eye is drawn over in their direction. Such persons find it difficult to keep the eye in its proper situation; to do so, they have to exercise a strong mental effort by which the weaker muscles are excited to stronger action. The moment that effort is withdrawn, the eye, with a kind of jump, slips out of its place. A cure for squinting is sometimes found in an ingenious method of covering with a shade that corner of the eye towards which the eye is unduly drawn. This brings the weak muscles of the opposite corner into exercise, whilst the state of rest into which the stronger muscles are thrown weakens them, and thus the balance in the powers of the muscles of the eye is gradually restored.

It is also to be observed that very nice proportions must exist between the sizes of the muscles and the sizes of the bones. If this were not the case, our motions, instead of being firm and steady, would be all shaky and uncertain. In old persons the muscles become weak and relaxed; hence there is a tendency in the movements of the aged to fall, as it were, together: the head is no longer erect, the body bends, the knees totter, and the arms lean towards the body, as if for support.

In the child a somewhat similar state of things exists. The muscles have not yet been properly developed, nor have they been brought sufficiently under the control of the nervous system. The child therefore totters and tumbles about, and it is not until it has stumbled and tumbled some hundreds of times in its little history, that the muscles have become strong enough to fulfil their office, or have been brought sufficiently under the control of the nervous system to perform well the various duties required from them.

In all these things we recognise the perfection of the divine works. We are apt, too apt, to over look this perfection, because we cannot discover defects; but, by speculating upon what inconveniences we might suffer, were not things ordained as they are, we obtain most cheering evidences of divine goodness and wisdom.

Well, having taken this view of the muscular system of the external man, let us turn our attention to another set of muscles which have not yet been included in our contemplation. The muscles of which we have been speaking are called the voluntary muscles, because we have them under our own control—they are subject to the influences of our will.

But there is another set of muscles which have not yet entered into our contemplation. Where are they? Let us seek to discover them.

We speak of our hearts; but, do we know much of the subject of which we speak? We talk of the beating, or of the palpitation of the heart. But, what is it that causes the heart to beat? You cannot, if you wish it, make your heart beat more quickly or more slowly. Place your finger upon your pulse, and notice the degree of rapidity with which its pulsations follow. Now think that you should like to double the frequency of those pulsations. Say to the heart, with your inner voice, that you wish it to beat 120 times in a minute, instead of 60. It does not obey you; it does not appreciate your command. Now place your finger on the table, and your watch by the side of your hand, and tell your finger to beat the table 60 times in the minute, or 100 times, or 150 times, or 200 times, and the finger will obey you—because it is *moved by muscles which are subject to the will*, while the heart is composed of, and moved by, muscles which are *not subject to the will*.

Why should this be? Why should man have the power to regulate his finger, and not to regulate his heart? It might be well, perhaps, before reading further, to set down the book, and to endeavour to find a solution to this pleasing and instructive problem. Why should man have control over the motions of his finger, and have no control over the motions of his heart?

* * * * * *

What is the office of the heart? It is the hydraulic machine, by which blood is circulated through the system! What is blood? How is it produced? Why does it circulate? How does it circulate? These are notes which we must make, in our Book of Discoveries, as subjects upon which which we must seek information.

But now to the solution of our problem; a solution which shall afford a most beautiful and perfect illustration of the goodness and wisdom of our Creator. For the sustentation of our bodies it is needful that the blood should ever be in circulation. If the heart were to cease beating only for three or four minutes (perhaps less) life would be extinct. In this short time the whole framework of man, beautiful in its proportions, perfect in its parts, would pass into the state of dead matter, and would simply wait the decay that follows death. The eye would become dull and glazed, the lips would turn white, the skin would acquire the coldness of clay,—love, hope, joy, would all cease. The sweetest, the fondest ties would be broken. Flowers might bloom, and yield their fragrance, but they would be neither seen nor smelt; the sun might rise in its brightest splendour, yet the eye would not receive its rays; the rosy-cheeked child might climb the paternal knee; but there, stiff, cold, without joy, or pain, or emotion of any kind, unconscious as the block of marble would sit the man *whose heart for a few moments had ceased to beat.*

How wise, then, and how good of God, that he has not placed this vital organ under our own care! How sudden would be our bereavements—how frequent our deaths, how sleepless our nights, and how anxious our days, if we had to keep our own hearts at work, and death was the penalty of neglect.

And yet, before we pass from our

mother's womb, until we have reached life's latest moment,—through days of toil and nights of rest—even in the moments of our deepest sin against the God who at the time is sustaining us—that heart beats on, never stopping, never wearying, never asking rest.

And this brings us to another reflection—to most of us, another discovery. Our arms get weary, our legs falter from fatigue, the mind itself becomes overtaxed, and all our senses fall to sleep. The eye sees not, the ear is deaf to sound, the sentinels that surround the body, the nerves of touch, are all asleep,—you may place your hand upon the brow of the sleeping man, and he feels it not. Yet unseen, unheard, without perceptible motion, or the slightest jar to mar the rest of the sleeper, the heart beats on, and on, and on. As his sleep deepens, the heart slackens its speed, that the rest may be the more sound, and that his senses may not be weakened by the slightest disturbance. He has slept for eight hours, and the time approaches for his awakening. But is the heart weary—that heart which has toiled through the long and sluggard night? No! The moment the waking sleeper moves his arm, the heart is aware that a motion has been made, that effort and exercise are about to begin. The nerves are all awakening to action; the eye turns in its socket, the head moves upon the neck; the sleeper leaves his couch, and the legs are once more called upon to bear the weight of the body. Blood is the food of the eye, the food of the ear, of the foot, the hand, and every member of the frame. While they labour they must be fed—that is the condition of their life, the source of their strength. The heart, therefore, so far from seeking rest, is all fresh and vigorous for the labours of the day, and proceeds to discharge its duty so willingly, and so ably, that we do not even know of the wonderful movements that are going on within us.

Thus we have seen clearly the difference between the voluntary and the involuntary muscles, and we have perceived the goodness of our Creator in not entrusting to our keeping the control of an organ so vital to life, as the heart.

But the heart is not the only organ which thus works unseen and unfelt. There are the lungs and the muscles of the chest, the stomach, and other parts occupying the abdomen, together with all those muscular filaments which enter into the structure of the coats and valves of the blood-vessels, and which assist to propel the blood through the system.

All these are at work at every moment of man's life; and yet, so perfect is this complicated machinery, that we really do not know, except by theory, what is going on within us. Why, at every moment of our lives the most wonderful movements and changes are going on within our bodies.

During the time that the sleeper has been at rest, the stomach has been at work digesting the food which was last eaten. Then the stomach has passed the macerated food into the alimentary canal, the liver has poured out its secretion, and produced certain changes in the condition of the dissolved food; and the lacteals, of which there may be many thousands, perhaps millions, have been busy sucking up those portions of the food which they knew to be useful to the system, whilst they have rejected all those useless and noxious matters upon which the liver, like an officer of health, had set his mark, as unfitting for the public use. This busy life has gone on uninterruptedly, every member of that body, every worker in this wonderful factory, has been unremitting in his duty, and yet the owner, the master, has been asleep, and wakes up finding every bodily want supplied.

We have spoken of the liver, the lacteals, the stomach, and the alimentary organs connected with the stomach. We have not, however, sufficiently explained their interesting functions, structures, and situations. We shall give these organs special notice when entering upon other branches of our subject.

We will now, as we are examining the internal man, suppose that instead of his being covered with an opaque skin, that he is covered with a substance as clear as glass, and that, therefore, we are enabled to see every movement that occurs within the body.

What an astonishing sight would, under such circumstances, meet our view. That which would probably strike us most would be the wonderful network of bloodvessels that everywhere pervade the body. When we talk of a bloodvessel, our idea is simply of a fine tube through which the blood passes. But when we consider that these bloodvessels are so fine, and are so thickly distributed, that we cannot prick the finger, or any other part of the body, without opening several of these vessels, and allowing the blood to escape therefrom, we must be impressed with a sense of their wonderful minuteness, and of the immensity of their number.

We should, if examining a transparent body, see many millions of these bloodvessels; we should find them entering into every tissue, enfolding every fibre, and passing into the very centres of the bones.

We should, moreover, discover two sets of vessels. In one of these sets we should see a bluish blood travelling along, and in the other set, we should find the blood to be of a bright red. We should find the blue blood, in whatever part of the body it was discovered, travelling *towards* the heart; and the red blood, under all circumstances, and in all places, would be travelling *from* the heart.

The vessels containing the blue blood are known as veins; those which contain the red blood are the arteries. The red blood is flowing forth from the heart to feed the members of the body; the blue blood is the exhausted, or impure blood, which has yielded up its nourishment, passing back to the heart, to be thence transmitted to the liver and the lungs, to throw off the impurities it contains, and to take up fresh elements of nutrition to support the body.

That which we have supposed to be seen, in the foregoing remarks, may actually be witnessed, at least, as far as the circulation of the blood is concerned. If you take a frog, and place its foot upon a microscopic slide, so as to bring the thin and semi-transparent web of the foot on the field of the instrument, you may see most distinctly the blood circulating through the vessels, darting along with the utmost rapidity, the motions of the heart of the animal being increased by the fright it experiences, at being made captive.

And what will be the appearance of the blood seen passing in those vessels? Not certainly that of a mass or stream of blood, as usually witnessed by the naked eye. The blood itself will present a most curious appearance; instead of looking like a red stream, in which no organic shapes can be discovered, it will be found to consist of a number of egg-like bodies, having a red centre, with a transparent shell, and these egg like bodies will be found surrounded with a watery fluid, in which they float, and are carried in rapid succession through the bloodvessels.

The human blood, like that of the frog, and indeed of all animals, is found to consist of small egg-like vesicles, suspended in a watery fluid.

We shall have now to inquire whence this blood is derived. We shall have to follow its course of circulation, and watch the changes that it undergoes. And we shall have to inquire *why* the blood thus circulates, and *why* it undergoes the changes described.

When we have done this, we shall have completed the first object of our discovery; we shall have examined the physical and physiological features of the inhabitant of the little world at home, which we are about to explore.

Whence comes the blood? The blood is usually understood to proceed from the heart. And so it does, mechanically speaking. But the blood no more originates in the heart, than water originates in the pump which supplies our house. The heart is simply the machine by which the blood is kept in motion. There is no one organ of the body which can be said to produce blood, since several organs are engaged in its formation.

We will, therefore, begin with the beginning. And really, to do so, we must walk down into the kitchen, where Betty has just set a mutton chop upon the gridiron, and confess that blood-forming has commenced with Betty's operations upon the mutton chop. Yes, that identical chop, now spirting out its fat upon the fire, is destined to enter into a new life; its own particles will be broken up and destroyed (and that is what Betty is assisting to do); then those particles, reformed and reorganised, will go to swell the numbers of the little egg-shaped bodies in the blood, and in a few hours that piece of mutton will become a part of man!

Our kings and courtly ladies, and all who pride themselves as being greater than their fellow-beings, may learn humility from this one lesson at least—they are flesh of the same flesh. One may feed upon venison and game, the other upon beef and mutton, but the same fact governs the cases of all mankind—that the flesh of the slaughtered animal, or of the substance of the plucked fruit, becomes a part of the bodily substance of the human being. And, however daintily one man may live, or however plainly another, they are one in flesh and blood, and no earthly wealth or wisdom can elaborate a distinction.

Well, now that Betty has done her part in the laboratory of the kitchen,—now that she has, by the application of heat, softened the muscular fibres of the chop and set its juices free from the vessels and tissues in which they were held bound, let us consider what takes place when the chop is delivered up to its owner in the dining-room.

With the knife and fork he separates the large substance into smaller pieces; then he places one by one these small pieces into the mouth, where they are subjected to the grinding operations of the teeth—the object still being to destroy the organic formation of the chop—to reduce what we call *mutton* to the simple state of *matter*. And to accomplish this, two agencies, or indeed we may say three, will be employed. The first is the mechanical agency of the teeth, and the internal parts; the next is the chemical agencies of the salivary, the gastric, and the biliary juices; and the third is the effect of heat in the body, &c.

What we want to impress strongly upon the reader is, that this mutton must be torn to pieces, macerated, parboiled, and wholly changed in its condition, before it can become part of the man who eats it.

While the teeth are tearing it, the glands of the mouth pour in the salivary juice, which saturates the masticated mutton, and in this state it is passed into the stomach. Now, the stomach is a sort of bag, not unlike in shape the bag of a Scotch bag-pipe. It lies across the body, and has a motion something like that which we may notice in the leech, or in the red worms which crawl the earth—a series of muscular rings passing along the body keep up a continual motion from one extremity to the other.

Let us suppose, now, that we see the mutton chop, broken all to pieces by the teeth, now resting in the chamber of the stomach: the stomach, stimulated by the presence of the food, begins to move, and to roll the meat about; and as it rolls there enters from the sides of the stomach a powerful juice, called the gastric juice, which assists in dissolving the particles of the chop. And as this juice becomes mingled with it, the chop turns soft and pulpy, and the stomach begins to work more actively, and to throw the pulp formed out at its lateral extremity. But at that extremity there is a door-keeper, in the form of a valve, something which closes the outlet as an india-rubber ring would close the neck of a purse. If the matter which goes up to the valve, or outlet, be soft, and well dissolved, the valve will allow it to pass; but if there are still lumps of undissolved meat—bits of the chop—still remaining, the valve will not allow them to pass, but sends them back, again and again, until they are dissolved. One form of indigestion arises from the inability of the stomach sufficiently to dissolve the food. When the stomach is debilitated by excesses, or when the general vigour of the system is failing, the strength of the stomach fails also. Then arise "head-aches" and "heart-burns," showing that other parts of the system sympathise with the debility of the stomach.

We may say, therefore, that the mutton ceases to be mutton, when it leaves the stomach. But it has not yet commenced to be a part of the man. It is now simply a broken and pulpy mass, and has become an inorganic substance, in a state now fitted for reorganisation.

As it leaves the stomach, and is passing through a passage which communicates with the bowels, it is acted upon by the biliary juice of the liver. The moment this juice acts upon the substance, which has of course become mixed in the stomach with other substances—such as the potato and the bread eaten with the chop, the salt and pepper used for seasoning it, &c. &c., a remarkable change takes place in its condition—one part of the matter passing through the tube to enter the bowel, is acted upon by the juice of the liver, and turns yellow, but upon the surface of this may be seen numerous little globules of a milky substance—this which is, in fact milk, the nourishment which the body will derive from the food taken. But although it is formed into milk, it cannot nourish the body in that state—it must first be converted into blood. How, then, is this accomplished?

As the nourishing and the refuse matter are passing together through the bowel, the nourishing part, the milky globules, already spoken of, are taken up by a set of vessels called lacteals, whose mouths open on the inside of the bowel. The reader should notice this, because it is commonly supposed that the nourishment derived from food passes at once into the bloodvessels and becomes blood. All these vessels, then, convey their gleanings to one larger vessel, by which the whole of the nourishment is borne upwards, to a great vein, situated near to the heart, and which is bringing back to the heart blood which, having gone the round of the body, has become impoverished, and comes back to be purified and restored. With this blood the nourishment goes into the heart, and from the heart is sent through another set of vessels into the lungs—there it throws off carbon, in the form of carbonic acid gas, and takes up oxygen, or vital air; and, from this moment it is probable, that the dead mutton, so lately frizzling upon the gridiron, has acquired life again in a new form. That it now exists in numerous little egg-shaped vesicles, and that, in this shape, it is about to travel through the body, repairing and uniting with nerves, muscles, or bones —becoming a part of an eye, an ear, or a nose, or any other member of the living system.

For this purpose, after it has been vitalised in the lungs, it goes back to the heart, to be distributed through the body, and to fulfil its ultimate destination.

The circulation may be thus described. The heart sends out through one large bloodvessel a constant stream of blood; this vessel branches off into vessels of smaller size, and these into smaller ones again—just as the roots of a tree commence in large branches near the trunk, and then taper away, until they become as fine as silk. Well, these vessels are called *arteries*—they convey the nourishing blood throughout the body, and when they reach their extremities they are met by the veins, which receive from them whatever parts of the blood the arteries have not employed for purposes of nourishment in their course. As the arteries grow *smaller*, so the veins grow *larger* from the point at which they receive the blood. The small veins merge into larger ones; they have to collect the impure blood and take it back to the heart to be mixed with fresh nourishment, and to be again vitalised in the lungs.

These, then, are the wonderful operations which we should see incessantly going on, if we could look into a glass body and watch the changings and workings that are for ever in progress within the system.

It transpires from these facts and observations that the wonderful operations of birth, decay, and death, are continually going on within us. Man, so far as his organic substance is concerned, may be said to decay and die many times in the course of a life-time. His substance is continually undergoing renewal. Were it not so, what would be the necessity for, and what would be use of, the large amount of food which man consumes daily, and which as it accumulates in the course of years, swells to an amount that is perfectly astounding? Let our fellow discoverers open their note-books, and make the following calculations:—

Suppose a man to live eighty years, and to consume on an average two pounds of vegetable substance, say one of bread, and another of other vegetables, and one pound of animal food. How many quarters of wheat, how many sacks of potatoes, how many oxen, sheep, poultry, &c., would be devoured in a lifetime? These are interesting and important speculations, and we leave them to some of our fellow-travellers to work out. We have already made calculations upon the subject, but we wish to kindle an interest in the minds with which we are associated in this "Journey of Discovery," and therefore we set them something to do for themselves.

We have now given such a view of the physical constitution of man, as will greatly heighten the appreciation of those facts which bear upon his existence, and the objects and elements by which he is surrounded. There are other parts of the system which might be considered with much profit. But we have a long journey to perform, and as, when we come to explore "Our Library," which is an important part of our house, and to make discoveries among authors and books, we shall be able to point out some good authorities upon the subject, we shall now turn from the further contemplation of the inhabitants of our house, to the various objects by which they are surrounded.

NATURAL HISTORY COLLECTIONS SAFE FROM INSECTS.—A. F. Schlotthauber, naturalist at Göttingen, offers for the sum of £100 to communicate his new method of freeing and protecting Natural History Collections from insects, without opening the cases in which they are preserved, and without the application of scents, poisons, heat, or other means injurious to the collections themselves.

EXTRAORDINARY BIRTH.—On Sunday morning, the 13th April, between the hours of eight and ten, Mrs. E. Phin, wife of Edward Phin, a guard in the service of the London and North Western Railway Company, residing at 144, Scofield-street, Bloomsbury, Birmingham, was safely delivered of five children—three boys born alive and doing well, and two girls born dead.

SONG.

BY J. DEFFETT FRANCIS.

(From the May number of the "Train.")

ANNIE, she hath dove-like eyes,
Dora, she hath golden hair,
Fanny's bland, with soft replies,
Flora's breath is fragrant air.
Mary hath a form divine,
Eve a voice both sweet and low,
Phœbe's lips like rosy wine,
Blanche a skin like virgin snow.

Amy, tiny hands and feet;
Alice, healthy smiles a store;
Rose, with balmy sighs replete;
Patty, dimpled o'er and o'er;
Ada, graceful as a fawn;
Kate, majestic, fair, and tall;
Jessie, bland as summer dawn;
One I know combines them all.

Take each charm of form and face,
Fragrant breath, voice, hair and eyes;
Add from each the mental grace,
One I know all these supplies.
Do not ask the fair one's name,
Paining thus her modest mind;
In this room she blushing came,
She by all these charms defined.

THE PROGRESS OF DISCOVERY.

We are confirmed in the conclusion that the popular diffusion of knowledge is favourable to the growth of science, when we reflect that, vast as the domain of learning is, and extraordinary as is the progress which has been made in almost every branch, we may assume as certain, we will not say that we are in its infancy, but that the discoveries which have been already made, wonderful as they are, bear but a small proportion to those that will hereafter be effected; and that in everything that belongs to the improvement of man, there is yet a field of investigation broad enough to satisfy the most eager thirst for knowledge, and diversified enough to suit every variety of taste, order of intellect, or degree of qualification. For the peaceful victories of the mind, that unknown and unconquered world, for which Alexander wept, is for ever near at hand; hidden, indeed, as yet, behind the veil with which Nature shrouds her undiscovered mysteries, but stretching all along the confines of the domain of knowledge, sometimes nearest when least suspected. The foot has not yet pressed, nor the eye beheld it; but the mind, in its deepest musings, in its wildest excursions, will sometimes catch a glimpse of the hidden realm—a gleam of light from the Hesperian island—a fresh and fragrant breeze from off the undiscovered land—

> "Sabæan odours from the spicy shore,"

which happier voyagers in after times shall approach, explore, and inhabit. Who has not felt, when, with his very soul concentrated in his eyes, while the world around him is wrapped in sleep, he gazes into the holy depths of the midnight heavens, or wanders in contemplation among the worlds and systems that sweep through the immensity of space—who has not felt as if their mystery must yet more fully yield to the ardent, unwearied, imploring research of patient science?

Who does not, in those choice and blessed moments, in which the world and its interests are forgotten, and the spirit retires into the inmost sanctuary of its own meditations, and there, unconscious of everything but itself and the infinite Perfection, of which it is the earthly type, and kindling the flame of thought on the altar of prayer—who does not feel, in moments like these, as if it must at last be given to man to fathom the great secret of his own being—to solve the mighty problem

> "Of providence, foreknowledge, will, and
> fate?"

When we think in what slight elements the great discoveries that have changed the condition of the world have oftentimes originated; on the entire revolution in political and social affairs which has resulted from the use of the magnetic needle; on the world of wonders, teeming with the most important scientific discoveries, which has been opened by the telescope; on the all-controlling influence of so simple an invention as that of moveable metallic types; on the effects of the invention of gunpowder, no doubt the casual result of some idle experiment in alchemy; on the consequences that have resulted, and are likely to result, from the application of the vapour of boiling water to the manufacturing arts, to navigation, and transportation by land; on the results of a single sublime conception in the mind of Newton, on which he erected, as on a foundation, the glorious temple of the system of the heavens; in fine, when we consider how, from the great master-principle of the philosophy of Bacon—the induction of Truth from the observation of Fact—has flowed, as from a living fountain, the fresh and still swelling stream of modern science; we are almost oppressed with the idea of the probable connexion of the truths already known, with great principles which remain undiscovered,—of the proximity in which we may unconsciously stand, to the most astonishing, though unrevealed mysteries of the material and intellectual world.

If, after thus considering the seemingly obvious sources from which the most important discoveries and improvements have sprung, we inquire into the extent of the field, in which farther discoveries are to be made, which is no other and no less than the entire natural and spiritual creation of God—a grand and lovely system, even as we imperfectly apprehend it, but no doubt, most grand, lovely, and harmonious, beyond all that we now conceive or imagine; when we reflect that the most insulated, seemingly disconnected, and even contradictory parts of the system, are no doubt, bound together as portions of one stupendous whole; and that those which are at present the least explicable, and which most completely defy the penetration hitherto bestowed upon them, are as intelligible, in reality, as that which seems most plain and clear; that as every atom in the universe attracts every other atom, and is attracted by it, so every truth stands in harmonious connexion with every other truth; we are brought directly to the conclusion that every portion of knowledge now possessed, every observed fact, every demonstrated principle, is a clue, which we hold by one end in the hand, and which is capable of guiding the faithful inquirer farther and farther into the inmost recesses of the labyrinth of Nature. Ages and ages *may* elapse, before it conduct the patient intellect to the wonders of science to which it will eventually lead him; and perhaps with the next step he takes, he will reach the goal, and principles destined to affect the condition of millions beam in characters of light upon his understanding. What was at once more unexpected and more obvious than Newton's discovery of the origin of light? Every living being, since the creation of the world, had gazed on the rainbow; to none had the beautiful mystery revealed itself. And even the great philosopher himself, while dissecting the solar beam, while actually untwisting the golden and silver threads that compose the ray of light, laid open but half its wonders. And who shall say that to us, to whom, as we think, modern science has disclosed the residue, truths more wonderful than those now known will not yet be revealed?

It is, therefore, by no means to be inferred, because the human mind has seemed to linger for a long time around certain results—as ultimate principles—that they and the principles closely connected with them are not likely to be pushed much further; nor, on the other hand, does the intellect always require much time to bring its noblest truths to seeming perfection. It was, we suppose, two thousand years from the time when the peculiar properties of the magnet were first observed, before it became, through the means of those qualities, the pilot which guided Columbus to the American continent. Before the invention of the compass could take full effect, it was necessary that some navigator should practically and boldly grasp the idea that the globe is round. The two truths are apparently without connexion; but in their application to practice, they are intimately associated. Hobbes says that Dr. Harvey, the illustrious discoverer of the circulation of the blood, is the only author of a great discovery who ever lived to see it universally adopted. To the honour of subsequent science, this remark could not now with equal truth be made. Nor was Harvey himself without some painful experience of the obstacles arising from popular ignorance, against which truth sometimes forces its way to general acceptance. When he first proposed the beautiful doctrine his practice fell off; people would not continue to trust their lives in the hands of such a dreamer. When it was firmly established and generally received, one of his opponents published a tract *De Circulo Sanguinis Salomoneo*, and proved from the twelfth chapter of Ecclesiastes that the circulation of the blood was no secret in the time of Solomon. The whole doctrine of the Reformation may be found in the writings of Wiclif; but neither he nor his age felt the importance of his principles, nor the consequences to which they led. Huss had studied the writings of Wiclif in manuscript, and was in no degree behind him in the boldness with which he denounced the papal usurpations. But his voice was not heard beyond the mountains of Bohemia; and he expired in agony at the stake, and his ashes were scattered upon the Rhine. A hundred years passed away. Luther, like an avenging angel, burst upon the world, and denounced the corruptions of the Church, and rallied the host of the faithful, with a voice which might almost call up those ashes from their watery grave, and form and kindle them again into a living witness of the truth.

Thus Providence, which has ends innumerable to answer, in the conduct of the physical and intellectual, as well as of the moral world, sometimes permits the great discoverers fully to enjoy their fame, sometimes to catch but a glimpse of the extent of their achievements, and sometimes sends them dejected and heart-broken to the grave, unconscious of the importance of their own discoveries, and not merely undervalued by their contemporaries, but by themselves. It is plain that Copernicus, like his great contemporary, Columbus, though fully conscious of the boldness and the novelty of his doctrine, saw but a part of the changes it was to effect in science. After harbouring in his bosom for long, long years that pernicious heresy—the solar system—he died on the day of the appearance of his book from the press.

The closing scene of his life, with a little help from the imagination, would furnish a noble subject for an artist. For thirty-five years he has revolved and matured in his mind his system of the heavens. A natural mildness of disposition, bordering on timidity, a reluctance to encounter controversy, and a dread of persecution, have led him to withhold his work from the press, and make known his system but to a few confidential disciples and friends. At length he draws near his end; he is seventy-three years of age, and he yields his work on "The Revolution of the Heavenly Orbs," to his friends for publication. The day at last has come, on which it is to be ushered into the world. It is the 24th of May, 1543. On that day, the effect, no doubt, of the intense excitement of his mind, operating upon an exhausted frame—an effusion of blood brings him to the gates of the grave. His last hour has come: he lies stretched upon the couch from which he will never rise, in his apartment at the Canonry at Frauenberg, East Prussia. The beams of the setting sun glance through the Gothic windows of his chamber; near his bedside is the armillary sphere, which he has contrived to represent his theory of the heavens; his picture, painted by himself, the amusement of his earlier years, hangs before him; beneath it are his astrolabe, and other imperfect astronomical instruments; and around him are gathered his sorrowing disciples. The door of the apartment opens;—the eye of the departing sage is turned to see who enters: it is a friend, who brings him the first printed copy of his immortal treatise. He knows in that book he contradicts all that had ever been distinctly taught by former philosophers; he knows that he has rebelled against the sway of Ptolemy, which the scientific world had acknowledged for a thousand years; he knows that the popular mind will be shocked by his innovations; he knows the attempt will be made to press even religion into the service against him; but he knows that his book is true. He is dying, but he leaves a glorious truth, as his dying bequest to the world. He bids the friend who has brought it to place himself between the window and his bedside, that the sun's rays may fall upon the precious volume, and he may behold it once more, before his eyes grow dim. He looks upon it, takes it in his hands, presses it to his breast, and expires. But no; he is not wholly gone. A smile lights up his dying countenance; a beam of returning intelligence kindles in his eye; his lips move; and the friend who leans over him can hear him faintly murmur the beautiful sentiments which the Christian lyrist of a later age has so finely expressed in verse:—

"Ye golden lamps of heaven, farewell, with all
your feeble light;
Farewell, thou ever-changing moon, pale
empress of the night;

And thou, refulgent orb of day, in brighter flames array'd,
My soul, which springs beyond thy sphere, no more demands thy aid.
Ye stars are but the shining dust of my divine abode,
The pavement of those heavenly courts, where I shall reign with God."

So died the great Columbus of the heavens.

ON POISONING BY ACONITE ROOT (MONKSHOOD) MISTAKEN FOR HORSERADISH. (*See p.* 96).

At a recent meeting of the Medical Society of London, Dr. Headland read a paper upon the above subject, which possesses much interest from the recent accidental poisonings by aconite root in Scotland.

After glancing at the history of the plant, and its use as a poison in ancient times, Dr. Headland referred to a number of statements made by authors in the middle ages, which showed that the poisonous properties of the plant were well understood by them. Poisonings by aconite in modern times were usually accidental. A number of cases in which the leaves and shoots had been eaten with fatal effects, were first briefly remarked upon, and then the cases of poisoning by aconite root which had been recorded in this country during the last few years were divided under two heads. First—Cases of an overdose of some preparation given as medicine. This was generally the tincture. Second—Cases in which the root had been eaten by mistake as an article of diet.

1st.—Four cases of poisoning by the tincture have been recorded during the last five years. Others are said to have happened. Of these four persons, two died from taking one fluid drachm of Fleming's tincture; one died from the effects of twenty-five minims of the tincture of the London Pharm.; a fourth barely escaped from a dose of fifteen minims of the same. Two of these cases were attributable to carelessness in dispensers; one to ignorance of the power of the preparation. The author made three recommendations with the hope of obviating such accidents for the future: Firstly, to carry out the plan of the Dublin College, requiring druggists to keep all dangerous preparations in square or angular bottles, and the others in round bottles. Secondly, that the tincture of aconite, if used, should be made of one uniform strength (as far as possible). At least three different tinctures are in use in this country. Or, thirdly, that it would be still better, to discard this tincture altogether, as an uncertain preparation, substituting for it a solution of aconita of one fixed strength, containing 1-600th of a grain in each drop.

2nd. In nearly all the cases in which aconite root had been eaten as food, the singular error has been made of mistaking it for the root of the common horseradish, and so scraping and eating it with roast beef. The author read accounts of four cases of this fatal error which have occurred of late years, the last of them being the recent tragedy at Dingwall, in Scotland, when three gentlemen lost their lives. To show that such mistakes could not be committed by careful persons, specimens and drawings of horseradish and aconite root were exhibited and compared. The acid but not pungent taste of the aconite parings, and *the pinkish colour which they assume when exposed to the air*, were amongst the points noticed.

The author, having noticed a singular case of poisoned coffee, proceeded to state that there were two ways in which a case of aconite poisoning could be recognised: 1. By the symptoms, which are very characteristic. 2. By obtaining some of the poisonous principle, by a chemical process, from the contents of the stomach and matters vomited, and then trying its action upon small animals, or on the tongue, &c. There are no distinctive chemical tests for it, but 1-300th of a grain of the alkaloid (aconitina) would kill a mouse, and 1-1000th placed on the tip of the tongue would cause tingling and numbness.

With regard to the treatment of such cases of poisoning, Dr. Headland recommended the immediate and free administration of animal charcoal, mixed with water: this to be followed by a zinc emetic, then by brandy and ammonia. The charcoal has the power of retaining and separating the poisonous alkaloid, and if we have rendered help in time, the patient may perhaps be saved.

Dr. Guy had had no experience of poisoning by aconite, but would refer to one point in reference to the subject. It might be supposed that the acrid taste of the aconite would directly indicate to the person eating that it was not hot horseradish; but this acridity was not observed immediately; a minute or two, or even more, might elapse before it was felt, and a good deal of food might be swallowed before the taste was detected.

Mr. Bishop spoke of *the necessity of caution in respect to the planting of horseradish in the neighbourhood of aconite.*

Dr. Webster would be glad to find the value of animal charcoal tested as an antidote to aconite by experiments on animals. He believed that a case of poisoning by the root of aconite, not referred to by Dr. Headland, had occurred in Lambeth.

Mr. Canton related the case of a patient who had taken an over-dose of aconite by mistake, for rheumatic disease of the eye. The man was found, shortly after, so much affected as to be unable to give an account of his sensations. He was throwing his head back, rubbing his throat, and suffering from symptoms of general palsy, was restless, bedewed with a cold perspiration, and with a pulse scarcely perceptible. The pupils were dilated. He had vomited considerably, and stimulants, consisting of ammonia and brandy, were given to him freely; counter irritation was also applied to his legs, and he got well.

Dr. Thudichum referred to the value of small doses of aconite in the treatment of pneumonia. He preferred a tincture of the spirituous extract to any other.

Mr. Headland inquired whether the author was acquainted with the case which occurred to Dr. Golding Bird, in which two grains and a half of aconite were taken by a gentleman, without destroying life. He should be glad to hear a little more decided evidence respecting the condition of the pupil in poisoning by aconite. He referred to Dr. Garrod's experiments on the value of animal charcoal in cases of vegetable poisoning, and thought if this agent was as valuable as stated, it should be always in the immediate reach of the practitioner. He ridiculed the notion of treating disease by aconite in the doses recommended by Homœopaths, the smallness of which defied all calculation. Throwing a grain of calomel into the Thames at Battersea-Bridge, and ordering the patient to drink the water at Gravesend, to procure a mercurial action, was dosing the patient largely, when compared with the Hahnemahnic prescription for the use of aconite. Mr. Headland then mentioned that some years since he took a drop of the tincture of aconite shortly before bedtime, and finding no effect from it, he swallowed another on getting into bed. He was called up in the night, and on rising was so giddy he could hardly stand, and was obliged to take some brandy-and-water before he could proceed to his patient. Aconite required to be used with extreme care and caution.

Dr. Headland, in reply, mentioned that several minutes would elapse before the tongue would be affected in any marked degree by eating the aconite root. In the case related by Dr. Golding Bird, the aconitine was no doubt inert, as was the case with much that was sold in the shops. (*See p.* 96.)

Preaching against Extravagance in Dress.—Several of the popular preachers in Paris have entered upon a crusade against the lavish expenditure of their lady hearers upon dress, the waste of material especially exciting their indignation. One of them, a bishop, exclaimed in the height of his zeal, in the midst of a late discourse, "Let women remember, while putting on their profuse and expensive attire, how narrow are the gates of Paradise!"

The man who stammers at his name is in debt—a certain symptom.

THOUGHTS

Without economy none can be rich, and with it few can be poor.

There is no grief like the grief which does not speak.

In this world, purses are the arteries of life; as they are full or empty, we are men or carcases.

Time, with all its celerity, moves slowly on to him whose whole employment is to watch its flight.

It is a heaven upon earth to have a man's mind move in charity, rest in Providence, and turn upon the poles of truth.

The long morning of life is spent in making the weapons and the armour, which manhood and age are to polish and to prove.

The sweet breath of Spring should open hearts, as it uncloses myriads of buds and blossoms.

It is more from carelessness about truth, than intentional lying, that there is so much falsehood in the world.

Few people are wise enough to prefer the censure which is useful to them to the praise which betrays them.

Wise men are instructed by reason; men of less understanding by experience; the most ignorant by necessity; and beasts by nature.

Be not affronted at a jest. If one throw salt at thee thou wilt receive no harm, unless thou hast sore places.

It is a bad sign when a preacher tries to drive home his logic by thumping the desk with a clenched hand. His arguments are *so-fist*-ical.

It is the nature of ambition to make men liars and cheaters; to hide the truth in their breasts, and show, like jugglers, nothing in their mouths.

A million of blades of grass makes a meadow, and millions of millions of grains of sand make a mountain; the ocean is made up of drops of water, and life of minutes.

Love one human being purely and warmly, and you will love all! The heart in this Heaven, like the wandering sun, sees nothing, from the dewdrop to the ocean, but a mirror which it warms and fills.

SMILES.

An epitaph on a *Negro* baby at Savannah, commences "Sweet blighted *lily!*"

"An independent man," said Pitt, "is a man not to be depended upon."

To Widows.—Never encourage *weeds* when *flowers* look so much better.

Many a man's thoughts are like the omnibus,—there's hardly one of them that doesn't run to the Bank.

"Is your watch a lever?" "Lever! yes. I have to leave her once a-week at the watchmaker's for repairs."

A skull without a tongue often preaches better than a skull that has one.

Truth, they say, *lies* in a well. "For my part," said a wit, "I thought it the property of truth to *lie* nowhere."

Sir Thomas Overbury said of a man who had boasted of his ancestry, that he was like a potato—"the best thing belonging to him was underground."

An Irish student was once asked what was meant by *posthumous works*. "They are such works," said he, "as a man writes after he is dead."

An American paper, in announcing the opening of a new cemetery, says, "Mr. — had the pleasure of being first buried there."

A queer gatherer of statistics says, that of one hundred and fifty-eight women whom he met in the streets of a city in a given time, one hundred were sucking their parasol handles.

When Milton was blind he married a shrew. The Duke of Buckingham called her a rose. "I am no judge of colour," said Milton, "but it may be so, for I feel the thorns daily."

Mrs. Spekles says the best vegetable pill yet invented is an apple dumpling; for destroying a gnawing at the stomach, it is a pill which may always be relied on.

Formerly, women were prohibited from marrying till they had spun a regular set of bed furniture, and, till their marriages, were consequently called *spinsters*, which continues to this day in all legal proceedings.

THE ANTIQUITY OF MUSIC.

The first mention of music in the Bible was about 3870 years before the Christian era. In the 4th chapter of Genesis it is said, "Adah bare Jabal: he was the father of such as dwell in tents and of such as have cattle. And his brother's name was Jubal: he was the father of such as handle the harp and organ." From that time lawgivers, prophets, apostles, poets, and philosophers, have strenuously advocated the cultivation of music, as a means of soothing the evil passions, softening the manners, improving the mind, and contributing to devotion. From the time of Moses, 1,571 years before the Christian era, music was constantly employed in religious and civil festivals, as well as in public and private rejoicings. The most sublime effect of music on record is in Exodus, when, after the passage through the Red Sea, Miriam the prophetess took a timbrel in her hand, and all the women went out after her, and the praises of the Deliverer of Israel were celebrated in the presence of the assembled camp. There is no reason to doubt that vocal and instrumental music were of contemporary origin; and, as Jubal introduced the one, so it was the belief of eastern nations that either the same person, or one of the same family, invented the other. Music being thus introduced by Jubal, it was in all probability known to Noah, who instructed his family in the art. When the world was repeopled after the flood, it is not at all improbable that Ham taught music to the Babylonians; and when Ham went into Egypt music was no doubt taken there, together with many other arts. The music of the Egyptians in those days greatly resembled that introduced by Jubal; and if the Temple service resembled the music of the Egyptians, and our cathedrals imitate the Temple, it is evident we have now amongst us a remnant of the greatest antiquity.

Plutarch observes that nothing is more useful than music to stimulate mankind to virtuous actions, and particularly to excite that degree of courage which is necessary to brave the dangers of war. The Lacedæmonians played upon the flute when approaching the enemy. The Cretans, for many ages, played their military marches to a lyre. The Lacedæmonians and Thebans had a flute upon their ensigns; the Cretans a lyre. Many ancient nations and cities impressed the lyre upon their coins, as their particular symbol. There is no doubt that music formed a great portion of the religious ceremonies of the Romans and Greeks. There are no proofs that any other language, except poetry, through the medium of music, was admitted in the rituals of pagan liturgies. The praises and thanksgivings offered up to the several deities were songs and choruses, accompanied by musical instruments and dancing, or by a solemn march and gestures. Plato was such a friend to the temple music as to wish that none other should be used by gods or men: and it has been clearly proved that in all nations the first public use of music was in the celebration of religious rites and ceremonies. Christianity being established in the East, peculiar ceremonial observances originated there, and were afterwards adopted by the western Christians. St. Ambrose, it is said, brought from thence the manner of singing the hymns; and Eusebius says, that a regular choir and method of singing the service were first established in the church at Antioch. St. Augustine and Gregory have also left undisputed testimony respecting the cultivation of music in the western churches. In the East, St. Basil, Chrysostom, and Jerome make early mention of chanters and canons being appointed to officiate in the church daily. In the fifth century Italy was laid desolate, and we may readily imagine that the arts were neglected. Music suffered the most, so that at the beginning of the sixth century, when the whole western empire was the scene of revolutions, its music was reduced to church chants and a few national songs. Afterwards, when the Goths settled in Italy, they cultivated the arts and soon imitated the enlightened manners of the people whom they had subjugated. In the year 590, Pope Gregory the Great collected the musical fragments of such ancient hymns as the primitive fathers had recommended. After this period the Roman schools of music shone with renewed lustre. Music was also strongly encouraged by Cloies, King of France. In 787, when Charlemagne went to Rome at the festival of Easter, a quarrel arose with the singers of France and Rome. The French affirmed that their singing was superior to the Roman, and the Romans accused the French of having corrupted the Gregorian chant. The dispute was carried before the Emperor, who decided by asking the following question: "Declare to us which is the most pure, water drawn from its source, or that which is taken from a distant stream?" "Water from its source," said the singers. "Well, then," said the Emperor, "return to the original source of St. Gregory, whose chant you have evidently corrupted."

It is somewhat strange to find the love of cruelty and the love of music in the same persons, yet such was the case with the Emperor Nero. He whose cruelties are known to all instituted exercises of music, poetry, and eloquence to be performed in Rome every fifth year. Amongst the ancients music exercised a powerful influence. The father of Cleopatra derived the name of Auletes, or the flute-player, from his excessive attachment to that instrument. Some of the early Christian fathers say that music drew many Gentiles into the Church who, coming from mere curiosity, liked its ceremonies so well that they were baptised before they departed.

In the present day the character of our Church music is such that it would sooner drive persons out of the Church than into it. In the reign of Edward IV., music, after living a vagrant life, passing from parish to parish, seems to have acquired a settlement, and letters patent were granted to certain persons who were minstrels to the king. It cannot too strongly be urged the advantages which music possesses in a religious and moral point of view, the incitements to its study are so numerous, that means ought without doubt to be adopted to accomplish its nationality.

VALENTINES.

Saint Valentine!—all we know of this personage is, that he was a priest at Rome, where he was martyred about A.D. 270, and had, in consequence, the honour of being assigned a niche in the record of saints, his post being the 14th of February.

The origin of this custom has been sought for in the Lupercalia of the Romans, and with much apparent reason, as will be evident when we come to inquire into the old mode of celebrating Valentine's Day, which, as we shall presently see, had but little in common with the modern habit of sending silly letters by the penny post. In ancient Rome a festival was held about the middle of February, called the *Lupercalia*, in honour of Pan and Juno, whence the latter obtained the epithet of *Februata Februalis*, and *Fabrulla*. Upon this occasion the names of young women were put, amidst a variety of ceremonies, into a box, from which [illegible] were drawn by the men as chance [illegible], and so rooted had this, like [illegible] other customs, become amongst the people, that the pastors of the early Christian Church found themselves unable to eradicate it. They therefore, instead of entering into a fruitless struggle, adopted their usual policy on such occasions, and since they could not remove what they held to be an unsightly nuisance, they endeavoured as a skilful architect would do, to convert it into an ornament. Thus they substituted other names for those of women, a change that would not seem to have been generally, or for any long time, popular, since we read that at a very remote period the custom prevailed of the young men drawing the names of the girls, and that the practice of adopting mates by chance-lots soon grew reciprocal between the sexes. In fact, Pan and Juno vacated their seats in favour of Saint Valentine, but the Christian bishop could not escape having much of the heathen ritual fastened upon him. We must not, however, imagine that Valentine's Day, any more than Epiphany or Candlemas, was celebrated with one uniform mode of observance; the customs attendant upon it varied considerably according to the place and period. In many parts of England, and more particularly in London, the person of the opposite sex who was first met in a morning, not being an inmate of the house, was taken to be the Valentine, a usage that is noticed by the poet Gray:—

> ' I early rose just at the break of day,
> Before the sun had chased the stars away;
> Afield I went, amid the morning dew,
> To milk my kine (for so should housewives do),
> The first I spied, and the first swain we see,
> In spite of fortune, our true love shall be."

That the lasses went out to seek for their makes, or mates—*i. e.*, Valentines—is also shown in poor Ophelia's broken snatches of a song:—

> " Good morrow! 'tis St. Valentine's day
> All in the morning betime,
> And I a maid at your window
> To be your Valentine."

Herrick has the following in his *Hesperides*, p. 172:—

"TO HIS VALENTINE ON ST. VALENTINE'S DAY.

> " Oft have I heard both youth and virgins say,
> Birds choose their mates, and couples, too, this day:
> But by their flight I never can divine
> When I shall couple with my Valentine.

In Dudley Lord North's *Forest of Varieties*, fol. 1645, p. 61, in a letter to his brother, he says:—*A lady* of wit and qualitie, who you well knew, *would never put herself to the chance of a Valentine*, saying that *shee would never couple herselfe but by choyce. The custome and charge of Valentines is not ill left, with many other such costly and idle customes*, which by a tacit generall consent wee lay down as obsolete."

We find the following curious species of divination in the *Connoisseur*, as practised on St. Valentine's day or eve. "Last Friday was Valentine Day, and the night before I got five bay-leaves, pinned four of them to the four corners of my pillow, and the fifth to the middle; and then, if I dreamt of my sweetheart, Betty said, we should be married before the year was out. But to make it more sure I boiled an egg hard, and took out the yolk, and filled it with salt; and when I went to bed, eat it, shell and all, without speaking or drinking after it. We also wrote our lovers' names upon bits of paper, and rolled them up in clay, and put them into water; and the first that rose up was to be our Valentine. Would you think it? Mr. Blossom was my man. I lay a-bed and shut my eyes all the morning till he came to our house; for I would not have seen another man before him for all the world."

Mr. Pennant, in his *Tour in Scotland*, tells us, that in February young persons draw Valentines, and from thence collect their future fortune in the nuptial state.

Oliver Goldsmith, in his *Vicar of Wakefield*, describing the manners of some rustics, tells us, they sent true love-knots on Valentine morning.

Herrick, in his *Hesperides*, p. 61, speaking of a bride, says:—

> " She must no more a-maying:
> Or by *Rose-buds divine*,
> *Who'll be her Valentine?*"

Misson, in his *Travels in England*, says:—" On the eve of the 14th of February, St. Valentine's Day, a time when all living nature inclines to couple, the young folks in England, and Scotland too, by a very antient custom, celebrate a little festival that tends to the same end. An equal number of maids and bachelors get together, each writes their true or some feigned name upon separate billets, which they roll up, and draw by way of lots, the maids taking the men's billets, and the men the maids'; so that each of the young men lights upon a girl that he calls his Valentine, and each of the girls upon a young man which she calls her's. By this means each has two Valentines; but the man sticks faster to the Valentine that is fallen to him than to the Valentine to whom he is fallen. Fortune having thus divided the company into so many couples, the Valentines give balls and treats to their mistresses, wear their billets several days upon their bosoms or sleeves, and this little sport often ends in love. This ceremony is practised differently in different countries, and according to the freedom or severity of Madame Valentine. There is another kind of Valentine, which is the first young man or woman that chance throws in your way in the street or elsewhere on that day."

In *Poor Robin's Almanack for* 1676, that facetious observer of our old customs tells us opposite to St. Valentine's day, in February—

> "Now Andrew, Anthony, and William,
> *For Valentines draw* Prue, Kate, Jillan."

PHYSIOLOGICAL TEST FOR POISONS.

IN our first *Journey* (see p. 47) we gave an account of Dr. Marshall Hall's suggestion for detecting the presence of poisons, which cannot be fully demonstrated by chemical agents by physiological means; that is, by the employment of small animals to demonstrate the effects of the suspected poisons upon their living systems. It appears that in examining the contents of the stomach of Mrs. Dove, poisoned at Leeds, this test was employed, and with the following results:—

"*Additional Report of the Analysis of the Contents of the Stomach.*

"As a further test of the presence of poison in the stomach, and one which as nearly as possible would amount to demonstration, we determined to try whether the spirituous extract obtained from the contents of the stomach, already shown by chemical tests to contain strychnine, possessed really the poisonous properties of that substance.

"We selected for experiment two rabbits, two mice, and a guinea pig, and as the most exact method of acting upon such animals with small quantities of poison, we applied it by inoculation through small openings, either in the cellular tissue beneath the skin, or into one of the serous cavities of the body; also in one of the mice, giving a portion by the mouth.

"In each of these five animals thus submitted to experiment the characteristic effects of poisoning by strychnine were produced. In three of them (the two mice and a vigorous rabbit) death ensued respectively in two minutes, twelve minutes, and fifty minutes, from the first introduction of poison. The symptoms preceding death were, disturbed respiration, general distress, convulsive twitchings or jerkings, tetanic spasms, a peculiar outstretching of the legs, and general rigidity of the body—symptoms which are exactly those commonly presented by strychnine.

"In the fourth animal, a rabbit, the symptoms were equally well marked and decisive, but although the animal lay for a time nearly dead, it afterwards revived and eventually recovered. In the guinea pig the effects were at first much more slight, the spasms were not so strong as to throw it down or entirely disable it, but on the following day it was found dead, with the muscles rigid and the hind legs extended, as if from the effects of the poison.

"For the purpose of comparison we conducted at the same time a parallel series of experiments on other animals with ordinary strychnine. In these animals the symptoms were exactly similar to those produced in the five acted on by the poison extracted from the body of Mrs. Dove.

"They were, as a series, not more severe and not more rapidly fatal. These animal experiments, which add the test of physiological effect to that of the chemical reagents, decisively confirm our analysis, and, taking them in connexion with the analysis and with the symptoms observed during life, and with the appearances noted in the body after death, they afford, in our opinion, the most complete proof that the death of Mrs. Dove was from the poisonous effects of strychnine, and from no other cause.

"GEORGE MORLEY,
"THOMAS NUNNELEY, F.R.C.S.E."

As a scientific demonstration, it is impossible to conceive anything more beautiful or more conclusive than this evidence. The dumb animals which formed the subjects of the experiments of Messrs. Morley and Nunneley are here summoned as unexpected witnesses, whom no cross-examination can shake, to bear irresistible testimony to the cause of the death of Harriet Dove.

A NOBLE BOY.—A boy was once tempted by some of his companions to pluck ripe cherries from a tree which his father had forbidden him to touch. "You need not be afraid," said one of his companions, "for if your father should find out that you had taken them, he is so kind he would not hurt you." "That is the very reason," replied the boy, "why I would not touch them. It is true, my father would not touch me; yet my disobedience I know would hurt my father, and that would be worse to me than anything else." A boy who grows up with such principles, would be a man in the best sense of the word. It betrays a regard for rectitude that would render him trustworthy under every trial.

NOBLE REPLY TO THE FOUNDER OF DULWICH COLLEGE.—Sir Francis Calton, who had foolishly squandered the property left to him by his father, once taunted Alleyn with having been a player. To this Alleyn replied:—"And where you tell me of my poore originall and of my quality as a player. What is that? If I am richer than my ancesters, I hope I maye be able to doe more good with my riches than ever your ancesters did with their riches. You must nowe beare povertye, and if you beare it more paciently than I, your desert wil be the gretter. That I was a player I can not deny, and I am sure I will not. My meanes of living were honest, and, with the poore abilytyes wherewith God blest me, I was able to do something for my selfe, my relatives and my friendes, many of them nowe lyving at this daye will not refuse to owne what they owght me. Therefore I am not ashamed."—PETERS.

When should an innkeeper visit a foundry? When he wants a *bar made*.

DOMESTIC SCENES IN RUSSIA.*

IN almost every house some female are is carried on, useful or ornamental; and the women are employed in spinning, weaving, knitting, carpet-making, &c.; for the raw material in Russia is worth little, and the manufactured article alone is valuable in the market.

The ladies of England, however, "who live at home at ease," little know the disagreeable and troublesome duties of inspection and correction which thus devolve upon the mistress of a family in Russia, from all the various branches of domestic industry which she is obliged to superintend. The discipline of the estate and of the household is maintained by means of the lash, from which neither sex is exempt. The frequency and severity of its use depends on the character of the master or mistress, many of whom, like those among whom I have lived, voluntarily limit the application of this punishment to male offenders, and always resort to it with great reluctance. The system, however, is revolting in itself, and it necessarily opens the door to frequent scenes of gross oppression and cruelty, where, as sometimes happens, the power is vested in hands nearly as rude as those of the serf himself. All owners of serfs are *noble*, but the law cannot make them all *gentle*.

The following anecdote, which I am assured is true, will illustrate the results of serfdom, while it will remind you of my remarks in a former letter on the Russian system of military rank, as furnishing the universal rule of precedence. Among the serfs owned by a widow lady was a girl, who had been brought up with unusual indulgence in the household, receiving a superior education, and acquiring manners far beyond those of her class; to which advantages was added the natural gift of an attractive person. At a proper age she was apprenticed at St. Petersburg to a French dressmaker or milliner; and having attained to some skill in her business, she was, after a time offered profitable employment. This her mistress permitted her to accept, on the usual payment of an *obrok* to herself in lieu of personal service. The girl conducted herself well in her situation, acquiring a knowledge of French, and forming habits of some refinement. Here she attracted the notice of an officer of the rank of colonel, who in due time proved his attachment by offering her marriage. The girl accepted his proposal, and nothing remained but to obtain her freedom from her mistress, the consideration for which—or, in plain words, the purchase-money—the colonel was eager to pay. This ought to have been regulated by the *obrok* which the girl had paid, calculated at so many years' purchase. The lover, however, was not inclined to dispute the price the lady might demand, but on applying to her and unfortunately explaining the state of affairs, he received for answer that on no terms whatever would she emancipate her slave. Every effort was used to shake the resolution, which appeared unaccountable; but argument, entreaty, and money were alike unavailing, and the lady remained inexorable; giving in the end the clue to her obstinacy by observing that she would never see her serf take precedence of her, as she would do if married to a colonel, while she was herself but the widow of a major. The match was necessarily broken off, and the girl's prospect of happiness destroyed. To complete her misery, her mistress revoked her leave of absence, and ordered her immediately to return to her native village; an order which the system of passports and police rendered it impossible to resist or evade. Arrived in the village, the unhappy girl, accustomed to the habits and comforts of civilised life, was clothed in the coarse garments of an ordinary peasant, and was moreover ordered forthwith to marry a rough-bearded *moujik*, or common country labourer. Revolting at this tyranny, and refusing to obey, she was flogged, and, though she still resisted for awhile, a long continuance of cruel and degrading treatment conquered her in the end, and she was forced to submit to the miserable lot entailed upon her by the wretched jealousy of her remorseless mistress. The story of this barbarity was told me with an indignation as strong as could be felt among ourselves, but there was no redress for the sufferer. The mistress up to a certain point had the law on her side, and where she had not, as in the compulsory marriage, might overpowered right. That such a case should be possible sufficiently condemns the whole system of serfdom.

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* By the Rev R. L. Venables. London: Murray.

SMOKELESS FIRES, AND ECONOMY IN COALS.

We must say a few words more upon the new method of making domestic fires (see pp. 6, 71). We have received many testimonies to the efficacy of the improved system. The following, from a correspondent of *The Builder*, is fully corroborative of what we have already asserted. E. R., it will be seen, has acted upon our suggestion, respecting the *iron plate*:—

"Your valuable notice of the new mode of making a fire in a common grate, which shall save coal, and consume a greater part of the smoke, only requires universal adoption to become one of the greatest blessings conferred upon us in this smoky—*ergo*, dirty—metropolis. Properly carried out, it would effect a perfect revolution in stoves, chimney-sweeping, fires from foul flues, price of coals and coke, safety from fire by shooting coals, smoky rooms, cinders and dust (the whole of which are nearly consumed), cleaner linen, brighter atmosphere, and sounder lungs. I have ever been a great advocate for giving due credit to Mr. Cutler for his admirable introduction of this principle more than thirty years since, when his patent was crushed by a combination of the trade, who dreaded the success of the patent. His more rational opponents afterwards acknowledged its value; and one stove-maker, who would not join the combination, a few years since, in a work on stoves and chimneys, eulogised the principle, and ignored the decision. His remarks on this crushed patent, the writer fully believes, first led Dr. Arnott to investigate the subject, and to produce the now-called Arnott's self-consuming, smokeless stove; but as simplicity is the greatest charm in all novelties, either patented or not, I conceive the suggested and successful process, applied to the common stove, and immediately at the service of all, without screws and levers, or an expansive smith's, ironmonger's, bricklayer's, or mason's bill, is a most valuable boon to society,—if society will only universally adopt it. I say *if*, for if it is proverbial what an obstinate person John Bull is. I think insurance companies should especially request, or specify to this mode, as particularly safe, until some more stringent means be ordered and enforced. Furnace chimneys no longer are permitted to pollute the air, and vomit out their smoke; why, then, should, *in the aggregate, a far greater nuisance* be for one day permitted to continue, when the public would infinitely gain, in every way, by the change? On seeing the notice in your journal, I at once resolved to try the new method, with, I must say, certain misgivings. With my own hands I adjusted everything, even to the paper at the bottom, and built up to the top bar with coals; then formed a sort of crow's-nest, of paper, shavings, and wood, and covered it lightly over with thin pieces of coal. Judge of my horror, in entering my room the next morning, and finding my servant had taken it all to pieces, and laid the fire in (I shall now call it) the antique way: fortunately, it was not lighted. I therefore had it again pulled to pieces, and replaced as I had laid it, and lighted. The next few minutes were most anxiously passed, fearing I might become the laughing-stock of family, servants, and all. What was my delight, however, when I saw the coals igniting one by one, and in half-an-hour, without billows, or clouds of smoke, a most cheerful fire: it was lighted at nine, and by one o'clock it was so fierce, that I was obliged to pour water on it to keep it down. This occurred after the paper at bottom had become burnt, the draught being greater. I may also add, that I have continued each day the new process, only substituting *sheet iron* at bottom, in place of *paper*. The comfort and cleanliness are beyond all conception, without considering the economy. Fire-irons are scarcely needed, it burning gradually downwards for hours, according to the depth of the stove. The deeper the stove the longer it burns. I have placed a fire-brick at the side of my stove—an ordinary parlour one,—owing to its being wider than its depth. I would strongly urge all persons not only to adopt the process, but to recommend it for general use.

"E. R."

STAR-GAZING.

Yes, dearest, each night I have gazed on that star,
And fancied thee near me, though distant afar,
Have hoped that a place in thy thoughts I might claim,
And watch'd the bright star while I murmur'd thy name.

But oft, when its radiant beams were most bright,
Auspicious, rejoicing my soul with its light,
A cloud, passing over, concealed from my view;
The bright orb of heaven which bound me to you.

And so, O beloved! when Hope seems most fair,
And my heart in its gladness is light as the air,
Sad doubt cometh o'er me, and darkly doth roll,
Its cloud of despair round the light of my soul

The cloud passes on, and again I can see
The beautiful star that unites me to thee;
Still gazing I hope, and still hoping I pray,
That thus may the cloud from my soul pass away.

The Learned Negro.—"Cæsar," said a negro to a coloured friend of his, "which do you tink is de most useful ob de commets, de sun or de moon?" "Wall, Clem, I don't think I should be able to answer that question." "Why, you black nigger, don't you see it's de moon, cos she shines in the night, when we need de light; and the sun shines in the day time, when de light is of no kinseconce." "Well; Clem, you is the most learned darkey I eber seen. I guess you used to sweep out a school house for a living."

THE ROMANCE OF A RHUBARB PIE.

A SHORT time ago I saw a discussion in your paper about the taste of plants being sometimes suspiciously like the manure in which they have been grown. Now this is not a pleasant idea. It dissipates at once all our fond romance of science about the conversion of elements into new forms. We may talk and write to people for ever about oxygen, hydrogen, Liebig, and Professor Way, the glaring fact will still remain suspended before the epicurean vision, that in eating our forced or "strongly" grown vegetables, we are not eating the rearranged, reorganised, or reconverted elements of poor mild harmless humus, but actually the very essence of some horrid artificial manure company, or one of those proud monuments of rural greatness, an ungypsumised dunghill. The question is one of national importance, and I really felt much cast down in mind when I read the facts, corroborated by those mystical hieroglyphics "M. J. B."

In this mental condition I was looking at the plants in my greenhouse, all redolent of pure fresh chlorophyll, and I was thinking that if it was really all a dream that roses had a beautiful smell, or whether some eastern genii had not invented the famous attar to delude mankind, or whether poets had not been equally disingenuous when they gave to the lily its whiteness, when my eyes fell with delight upon two huge pots containing most luxuriant stalks of what I knew full well would soon be converted into rhubarb pie. Now then, I said to myself, will this great question be decided? Visions of past days and dinners, in which rhubarb pie formed a prominent part, came at once into my mind's eye. And that smoky taste —what was that? My mind reverted insensibly but with horrid individuality to the sheep of our respected vicar then browsing in happy ignorance in the churchyard. Should any of my future dinners be from a haunch of this mutton, and a pie of that smoky rhubarb?

To settle the question, I had the rhubarb in my greenhouse cut on the spot, and the pie wherewith it was made was not smoky. "It is always the case, my dear," said a gentle voice, "with forced rhubarb." Alas! my greenhouse rhubarb was forced too. The truth shone out with clear unmistakable certainty. No perversion of Liebig could possibly settle the matter in favour of rearranged elements. The actual thing with which those pots and tubs were surrounded was positively identical with that smoky taste, and the glories of rhubarb pie are with me among the things that were—at least that form of it which proceedeth from tubs and pots with their well-known coverings of straw. *Sic transit gloria rhubarbi. R. Bree, Strickland.—Gardener's Chronicle.*

READING ALOUD.—There is no treat so great as to hear good reading of any kind. Not one gentleman or lady in a hundred can read so as to please the ear, and send the words with gentle force to the heart and understanding. Indistinct utterance, whines, drones, nasal twangs, gutteral notes, hesitations, and other vices of elocution, are almost universal. Many a lady can sing Italian songs with considerable execution, but cannot read English passably. Yet reading is by far the more valuable accomplishment of the two. In most drawing-rooms if a thing is to be read, it is discovered that nobody can read; one has weak lungs, another gets hoarse, another chokes, another has an abominable sing-song, evidently a tradition of the way in which he said Watts's hymns when he was too young to understand them; another rumbles like a broad-wheeled waggon; and another has a way of reading which seems to proclaim that what is read is no sort of consequence, and had better not be listened to.

WE heard a good joke once of a party of young fellows, who found fault with the butter on the boarding-house table. "What is the matter with it?" said the mistress. "Just you ask it," said one, "it is old enough to speak for itself."

THE ART OF THINKING.

FROM THE FRENCH OF DEGERANDO.

——"Yea, at that very moment,
Consideration, like an angel, came,
And whipp'd the offending Adam out of him;
Leaving his body as a paradise,
To envelop and contain celestial spirits."
Shakspeare.

Meditation, that great and universal instructor of the human race, which presides over all the creations of genius—the parent of philosophy—the sure guide of the arts in all their applications, because it enlightens them with general principles—plays a still more important, and more extensive part in the great process of moral development. It is here that its value is most conspicuous, for it puts man in possession of all his powers, and elevates him to the real dignity of his nature. In science and in art, thinking elaborates the elementary facts furnished by observation and experiment; in the work of moral development, its object is, to explore the inmost recesses of the mind, to collect together those elementary phenomena which reveal to us the great law of duty, and to familiarise us with a knowledge of ourselves. In science and in art, thinking operates only on ideas furnished by the senses and the intellect; in the work of moral education, it also excites those emotions or feelings which are associated with, or which naturally flow out of our conceptions of good, and which constitute the immediate springs of action. Thinking, indeed, may be said to be the living principle of wisdom; and, if the practice of it be so difficult in the ordinary course of study, and familiar only to a small number of minds, it becomes still more so, and is consequently less practised, in reference to moral objects. In the acquirement of scientific truth, thought is often aided by images of sense, by descriptions and definitions. In moral speculations, these exterior aids do not exist; the mind is thrown upon its own resources, is fed only by its own aliment, and maintains itself by its own native strength.

There is, in reference to morals, not only an *intellectual conception*, but an *emotion or feeling*; the one informing the intellect, the other influencing the will, *the emotion or feeling flowing naturally from clear conceptions of the intellect*. Such, indeed, is the imposing authority with which the Author of all things has invested the law of duty, that the conception of it has an effect upon the heart more certain and more absolute, according as it is presented to the mind, under a form simple and free from all that is foreign to its nature. It is, however, in vain, that we seek for the prototype of this conception out of ourselves; externally we are presented with a reflection or image only; it is to be found only *within*, in the inmost sanctuary of consciousness. But it is not sufficient that the conception should merely be *presented* to the mind; pains must be taken to search for it, and to keep it steadily before us; ignorance and inattention cover it as with a veil. It does not generally happen that the law of duty is violated with deliberate inattention, but rather by neglecting to study it; and so far from evil ever being committed for its *own* sake, it would be next to impossible to resist the attraction which surrounds the good, if we really knew how to consider it in all its beauty. It is not sufficient simply to *glance* at our duties, they should be deliberately reflected upon; their influence should gradually extend through the whole of our mortal nature; should ramify through, and penetrate its inmost folds; should, indeed, take entire possession of us. Such is the end proposed by the art of thinking, the first and the most powerful of all arts, since it alone enables man to enjoy the exercise of those high faculties which his Creator has endowed him with, and invests the mind with true causative power.

Struck with the importance and pregnant character of this great art, the ascetic writers and philosophers of antiquity have, with praiseworthy industry, endeavoured to develop its laws, and we are indebted to them for a great number of useful precepts, on a subject on which precepts are indeed essential. The art of thinking has, however, experienced the fate of other arts that have become loaded with didactic rules. It has become embarrassed by rules, useless both to such as are capable of acting of themselves, and to those that are not so; for the first act naturally without their aid, and the others are not in a state to profit by them at all.

In the hope of rendering the application of rules easy and certain, they have become purely mechanical, and consequently deprived of their true principle of action, both morally and intellectually. Rules have been laid down as to how to select a subject, how to determine it, how to circumscribe and divide it; the proper times and places for action and repose, for ideas and emotions, have been assigned; the boundaries, the methods and formularies, have all been laid down; the exercise of the moral and intellectual faculties has been rigorously bound by a preconceived system, utterly neglectful of the fact, that in order that the faculties should fulfil their destined functions, a certain degree of *independence* is necessary, and that the first and most indispensable requisite for thinking is, the acquirement of that energy and freedom of the mind, which allows the soul to appropriate to itself the truths on which it meditates, as if they sprang spontaneously from the depths of its own being.

The truth is, that in reference to the Art of Thinking, the difficulty does not lie so much in the act itself, at in the *commencement* of the act; not so much in the cultivation of the soil, as in the taking possession of it. The shores of the regions of thought are steep and rugged, and inspire feelings of affright and terror to those who first approach them. This is the true reason why the Art of Thinking is really practised by so few. In first attempting this difficult process, we are repulsed on all sides; memory assails us with a thousand reminiscenes in the retreat we may have chosen; capricious and wandering phantoms of objects, long since removed from us, return and importune us more than the objects themselves ever did, crowding round us in every direction. If we strive to appease this tumult, a still more painful state often awaits us—blank, void, and obscurity. Instead of those fertile regions where we had hoped to wander in joyous happiness, we discover a parched desert; it is in vain that we attempt to call up those heavenly images that were to transport us to Elysium; they fly from us, and we fall back upon ourselves, overwhelmed with weariness, the mind seeming but a vast solitude. By another effort the clouds become dissipated; ideas present themselves, yet confused, incoherent, and disordered; they escape us the moment we try to seize them; they confusedly mix and interfere with each other, and end by plunging us into a state the most painful of all, viz. doubt and scepticism. It is only when we have the courage to traverse these three successive zones, so to speak, that we come at last to that luminous and peaceful sphere, where the fruit of meditation and all its pleasures await us; but we are too often discouraged, and renounce the enterprise as impossible.

A most important thing therefore is, to facilitate the entrance to these regions of thought: and this can be effected only by a suitable preparation, the proximate result of which is the attainment of that state of mind which we usually term self-possession. Self-possession, however, does not exclusively consist, as some mystical writers have imagined, in isolating the soul from every external influence. It is the gathering together of all the powers of the mind, and the disposing of them with sovereign power. The presence of certain exterior objects may sometimes second, rather than counteract this energetic reaction; whilst on the other hand, the soul may, in the absence of external objects, become plunged into idle lethargy. Self-possession is a state of mental freedom, at once active and peaceful, because well ordered; but it is a state not under the immediate dominion of the will, nor is it easily acquired; it is a prerogative purchased by a long apprenticeship, and hence the error of those inexperienced persons who present themselves at the door of the sanctuary, with a confident hope of being instantly admitted. Neophytes of a day, they wonder that they are not at once initiated; they forget that they must first become *worthy* of initiation by a well-conducted life, by order, regularity, and temperance in all things, but especially by self-knowledge, and the habitual practice of self-vigilance and self-control.

(*To be continued.*)

THE TEACHING OF SMALL THINGS.

EXPERIMENTS familiar and vulgar to the interpretation of nature do as much, if not more, conduce than experiments of a higher quality. Certainly this may be averred for truth, that they be not the highest instances that give the best and surest information. This is not unaptly expressed in the tale, so common, of the philosopher, that while he gazed upward to the stars, fell into the water: for, if he had looked down, he might have seen the stars in the water; but looking up to heaven, he could not see the water in the stars. In like manner, it often comes to pass that small and mean things conduce more to the discovery of great matters, than great things to the discovery of small matters; and therefore Aristotle notes well, that the nature of everything is best seen in its smallest portions. For that cause he inquires the nature of a commonwealth, first in a family and the simple conjugations of society, man and wife, parents and children, master and servant, which are in every cottage. So, likewise, the nature of this great city of the world, and the policy thereof, must be sought in every first concordances and least portions of things. So we see that secret of nature (esteemed one of the great mysteries) of the turning of iron touched with a loadstone towards the poles, was found out in needless of iron, not in bars of iron.—*Bacon.*

A DIVINE benediction is always invisibly breathed on painful and lawful diligence. Thus, the servant employed in making and blowing of the fire (though sent away thence as soon as it burneth clear) ofttimes getteth by his pains a more kindly and continuing heat than the master himself, who sitteth down by the same; and thus persons industriously occupying themselves, thrive better on a little of their own honest getting, than lazy heirs on the large revenues left unto them.—*Fuller.*

SUBTLETIES OF SCIENCE IN SAMPLES OF SAND.—A great impostor, of the name of Simonides, was lately unmasked by Professor Ehrenberg, of Berlin, the celebrated microscopic discoverer of the animalcular or shelly origin of chalk, who, on examining with his microscope, a pretended ancient manuscript "discovered" by Simonides, observed, that the "ancient" ink ran above, not beneath, other ink of professedly less ancient or modern origin, also traced upon the parchment. The same acute professor has just succeeded in unkennelling a thief of gold coins, abstracted on their way in a barrel, by railway, to Berlin. When the specie was abstracted, the barrel was filled with common sand, and Professor Ehrenberg procured specimens of sand from the neighbourhood of every station on the line, and, on microscopically examining the samples, very soon identified the station whence the barrelled sand must have come; the hint was sufficient, and led to the identification of the thief amongst the few *employées* on duty at that particular place and time.

INDUSTRY AND ITS BLESSINGS.—People may tell you of your being unfit for some peculiar occupations in life; but heed them not. Whatever employ you follow, with perseverance and assiduity, will be found fit for you; it will be your support in youth, and your comfort in age. In learning the useful part of any profession, very moderate abilities will suffice—great abilities are generally injurious to the possessors. Life has been compared to a race; but the allusion still improves by observing that the most swift are ever the most apt to stray from the course.—*Goldsmith.*

GARDENING FOR MAY.

The Flower Garden.—This is perhaps the month of greatest enjoyment to the lover of flowers in the whole year, not only in contemplating what has been already produced, but in watching the development of those yet to come forth, and his duty for May should begin by planting the rooted runners of Neapolitan, Russian, and tree violets in beds, prepared by the addition of fresh compost, at from seven to nine inches apart; giving them abundance of water during the season. Pinks for showing should have all the stems but one removed, and all the buds but two or three. Dahlias may be planted out by the 15th, destroying earwigs. Pansies must be watered liberally in hot weather; and auriculas, as they decline bloom, should be placed on hard ground where they may have wet and air. Protect tulips by the top-cloth, and do not expose them to the sun after they show colour; give air, but protect from cold winds. Polyanthuses in pots should be put out after flowering, and, if necessary, parted for increase. Trim weak rose stocks, take off the lower branches to strengthen the upper shoots. Autumn flowering bulbs may be removed, and if required, should be procured now for planting. Gravel walks should be turned and rolled, box edges and grass verges trimmed, lawns neatly mowed once a week, or fortnight at most, and weeds carefully and constantly removed.

Kitchen Garden.—This is an active month also in the kitchen garden.

Broad beans should be sown for successive crops. Take off the tops of those in flower, and draw the earth round those advancing. Peas should be sown right through the season, every fortnight or three weeks, earth up those which are up and advancing; stick those which are forward enough. Endive should be sown for a few early plants. Sow more radish seed, and choose some of the best of the last crop, to plant out for seed. The March sown celery will be large enough to prick out; take the largest; and prick them out three or four inches apart, on a piece of rich ground. Sow more seed. Onions must be hoed and thinned; the plants for bulbing must not be closer than four or five inches; support the stems of those going to seed. Transplant a quantity of the spring-sown cabbages, in rows eighteen inches apart every way. Earth up those that are advancing. Sow other seed. When cauliflowers, under hand-glasses, show flower, break down one or two leaves to cover them from the wet and sun. If the weather prove dry, the plants must be watered; transplant others from the seed or nursery bed, and sow more seed. Brocoli seed must be sown this month, and it is better to sow two or three kinds at once, and at two separate seasons, a fortnight apart. If spinach is wanted in any quantity, it must be sown once a fortnight or three weeks. Kidney beans may be planted for a principal crop in drills, three to four inches apart in the drills, and the drills two feet from each other. Carrots and parsnips must be thinned out, as soon as they are large enough, six or eight inches apart, and carrot seed may still be sown. Sow scarlet runners the first week, and plant out six inches apart, in rows four feet from each other. If you grow asparagus for your own eating let it be three inches above the ground before you cut it. Melons and cucumbers require constant attendance, both as to the heat and the number of the fruit; not more than two or three ought to be grown on each plant at one time. Hotbeds or ridges, to do with hand-glasses only, may be formed out of doors to plant cucumbers and melons on. Sow cucumbers (for pickling) on the natural ground, or in an old declining hotbed.

Fruit Garden.—Wall-fruit trees of all sorts must be looked over, and their useless shoots removed—all those that grow out straight from the wall and those that are in each other's way. The shoots which are retained should be trained in the right direction, and when any shoot is too vigorous for the rest of the tree, it is better to cut it away. Thin the fruit as soon as it is large enough. Vines should be looked over, and the shoots stopped at the first or second joint beyond the fruit; clear them of all useless shoots, and see that the others are nailed properly. Strawberries in flower will require watering, if the weather be at all dry; and if in poor ground, liquid manure may be used with advantage.

A FEW WORDS ON HATS.

In Henry VIII.'s privy purse expenses, during the congress with Francis I., in 1520-1, at the celebrated meeting at the Field of Cloth of Gold, there is an entry in the quaint orthography of the time, "Peid for a hatte and plume for the king, in bolewn [bullion] xvs.;" and in the diary of his secretary there is another entry, for "ane scarlette beever hatte," presented on New Year's day, 1543. And in Wolsey's inventory, taken on his resignation of the Great Seal to Sir Thomas More, there are no fewer than *five* hats mentioned,—a large number, even for the magnificent Cardinal of York, when we remember the then novelty of the invention.

Even at this early period hats were of various shapes, both in the crowns and in the brims; the latter being chiefly broad, sometimes narrowing towards the back, and a little bent up and scooped in front. The fashion of the hat in the early part of the sixteenth century was much more diversified and capricious than it is even now, as will appear from an extract from Stubbs's "Anatomie of Abuses," published a little later in the century:—"Sometimes they use them [the hat] sharpe on the crowne of their heads; some more, some less, as please the fantasies of their inconstant mindes; others some be flat and broade, sometimes on the crowne, like the battlements of a house. Another sorte have rounde crownes, sometimes with one kind of bande, sometimes with another; now black, now white, now russed, redde, greene, or yellow; now this, now that; never content with one colour or fashion two daies to an end. And as the fashions be rare and strange, so is the stuffe whereof their hattes be made divers also; for some are of silk, some velvet, some of taffetie, some of a certain kind of fine haire; these they call bever hattes, and are of xx, xxx, and xl shillings price, all fetched from beyond the seas, from whence a great sort of other varieties doe come besides, and so common a thing is it, that every serveng man, countreiman, and others, even all indifferently, doe weare of these hattes."

About the beginning of 1700 the crown of the hat was mostly round, much lower than before, and had very broad brims, resembling what we now call Quakers' hats; the protrusive encumbrance of which soon suggested the convenience of their being turned up in front. Fashion soon dictated the utility of bending up another side of the flap, and ultimately the last and third portion, so that about 1704 it became converted into the regular three-cornered hat, which thenceforward became the order of the day, when feathers were worn.

About the middle of the eighteenth century, we are told by the *Gentleman's Magazine* that cardinals' hats were generally made in England. At the same time a round-edged, but flat-bottomed and full-brimmed hat came into general use; and the flat and cocked hats of all shapes dwindled completely out of common use, being only retained by certain classes or orders of people as a mark of rank or office. Twenty-five years after this a very near approach to the hat of the present time became the fashion, and some ten years later the formal, cumbrous cocked hat ceased to exist.

About the year 1792 the narrow-crowned, tall, conical hat was first introduced by the French; under these chimney-pot looking beavers, bedizened with rosettes, circling bands, and streamers of gay ribbons, much after the style of a Calabrian brigand, the Robespierres of the first French revolution covered their sanguinary heads.

Formal and ugly as the modern hat is, it is neither derived from the conical cap of the fourteenth century, nor the round-brimmed, steeple-crowned hat of the Puritans, but is copied from the high-crowned beaver of Essex and Raleigh's time, and which, with the exception of the buckle and feather, has undergone hardly any appreciable change in two centuries and a half.

AN INTERVIEW WITH THE REGISTRAR-GENERAL.

In the year 1853 the number of persons who married was 329,040, and the number of children born alive was 612,391; the excess of births over deaths was 191,294: so that the population of this country is increasing at the rate of nearly two hundred thousand per annum. During the same year 62,915 English men and women emigrated, of whom only 4,194 went to our flourishing North American colonies, where, in the opinion of the Registrar-General, "the soil and climate are so adapted to develop all the vigour of the British race."

Of the persons who married 9,131 men and 29,219 women were under age; and the Registrar-General states that *the proportion of early marriages is rapidly increasing.* The circumstances which govern this are curious. "The straw-plait and lace manufacturers in the south midland counties apparently promote early marriages by affording employment to children and to young persons." It appears that more widowers than widows get married again. Possibly the latter, if left comfortably off, are content to "let well alone." Of the persons who married, 49,983 men and 72,204 women were unable to sign their names. The proportion of persons able to write is highest in London and lowest in Wales. These figures show a deplorable lack of education.

Out of the number of children born, no less than 39,760 (or six-and-a-half per cent. upon the whole number) were born out of wedlock. Much-abused London, with all its temptations, is more moral in this respect than the rest of the community, only four per cent. of the births there being illegitimate; while in the town of Preston in Lancashire *more than ten per cent.* of the births come within that category. Even in the quiet little town of Stamford, in Lincolnshire, the proportion is nearly 420 legitimate to 40 illegitimate—nearly *ten per cent.*

The comparative mortality of the sexes is a subject of curious calculation. Up to the age of ten more boys die than girls; but after that period up to 35, the mortality of the female is in the ascendant. After the age of 45, the mortality of men is considerably greater than the mortality of women. Mortality varies, according to the more or less healthy state of the locality. In Rothbury and Glendale in Northumberland, and in Eastbourne in Sussex, the annual mortality is at the rate of 15 in 1,000; in Hendon, Dorking, and other places it is 17 in 1,000; in marshy parts of Cambridgeshire it is 25 in 1,000. In the Whitechapel district of London it is 30 in 1,000.

The Registrar-General has some pleasant and instructive gossip upon the subject of family nomenclature in England.

The most striking circumstance presented by the indexes, is the extraordinary number and variety of surnames of the *English* people. Derived from almost every imaginable object—from the names of places, from trades and employments, from personal peculiarities, from the Christian name of the father, from objects in the animal and vegetable kingdoms, from things animate and inanimate—their varied character is as remarkable as their similarity is often striking. Some of the terms which swell the list are so odd, and even ridiculous, that it is difficult to assign any satisfactory reason for their assumption in the first instance as family names, unless indeed, as has been conjectured, they were nicknames or *sobriquets,* which neither their first bearers nor their posterity could avoid.

The Registrar-General estimates that there are nearly forty thousand different surnames in England. It is estimated that among these there are 53,000 families bearing the name of Smith, and 51,000 bearing the name of Jones. The Smiths and Jones's alone are supposed to include about half a million of the population. On an average it seems, that one person in seventy-three is a Smith, one in seventy-six a Jones, one in 115 a Williams, one in 148 a Taylor, one in 162 a Davies, and one in 174 a

Brown." Among the list of peculiar names given we note the following:—Affection, Alabaster, Allbones, Awkward, Baby, Bolster, Bowel, Brains, By (the shortest English name), Camomile, Corpse, Dagger, Eighteen, Fowls, Fussey, Gin, Hogsflesh, Idle, Jelly, Kiss, Lumber, Muddle, Nutbrown, Officer, Pocket, Quince, Rabbit, Sanctuary, Tombs, Unit, Vulgar, Waddle, Yellow, and Zeal.

Appended to the population tables are some useful calculations upon many matters which bear upon, and influence the condition of the nation. In the first quarter of 1852 wheat was 40s. 10d. per quarter, and in the corresponding quarter of 1853 45s. 7d. Beef had risen three eighths of a penny per pound, and mutton an entire penny, and potatoes from 70s. per ton had risen to 127s. 6d.

Finally, we have some reports pursuant to the resolutions of the Statistical Congress in Brussels, for collecting systematic returns all over Europe, and a uniform nomenclature of the causes of death applicable to all countries. These have been prepared with great care, and will, we have no doubt, lead to the most valuable results in statistical science. A report of the proceedings of the International Statistical Congress held at Paris last year is also given.

TO———, ON HER RECOVERY.

[The following lines, never before published or printed, were written by Mrs. Hemans, when she had just attained her sixteenth year, and therefore not yet assumed the name by which she is generally known in English literature. They were addressed to an amiable and esteemed lady, lately deceased, whose family and that of the authoress were neighbours and friends, Mrs. Ffoulkes, of Erivictt, a beautiful place in North Wales, to which allusion is made in the congratulations here poetically offered for her recovery from illness. One of Mrs. Hemans' surviving children has forwarded to us the lines in question, which are here subjoined.]—*Critic.*

When watching by the sleepless bed,
Where sickness laid her fainting head,
Affection breathed the silent prayer,
That Heaven, relenting Heaven, would
spare;
That prayer Devotion bore on high,
Unlock'd the portals of the sky;
And, kneeling at the eternal shrine,
Implored relief for Caroline.

"Angel of Mercy! hear the sigh;
Look down upon the suppliant eye!
Oh! come with 'healing on thy wing:'
The balm of renovation bring!
To her, our joy, our hope, descend,
The Wife, the Daughter, and the
Friend!"
And Mercy heard! the prayer prevail'd!
Sickness! thy dart no more assail'd!
Yes, Mercy heard, with smiles benign,
And joy revived for Caroline!

Ye who in anguish, day by day,
Have seen the torch of life decay
(Like some exotic, fair and frail,
That dies before the stormy gale);
Have marked the sad expressive smile
That fain your sufferings would beguile;
The languor of the drooping frame,
That steals upon the vital flame;
Ye who have proved, for one as dear,
Each thrilling pulse of hope and fear;
Ye best can judge what *those* must feel
Who love with all affection's zeal,
When health her quivering lamp relumes,
And seems to promise brighter blooms;
Tints the pale cheek with living hue,
Fires the dim eye with radiance new!
Soon may we see her light divine
Beam from *thine* eyes, our Caroline!

The cloud that shaded with alloy
The heaven of calm domestic joy,
That cloud is gone! that heaven is bright
Again with pure and tempered light!
Long may it smile with ray serene
O'er sweet Erivictt's woodlands green;
O'er the dear Parcot's locks of snow
Long may its balmy sunshine glow!
Mild as the southern breezes play,
And genial as the skies of May—
And she, its gentle day-star shine,
She whom we love—our Caroline!

FELICIA BROWNE.

A WAG says there is no danger of hard times among the shoemakers because every shoe is *sol'd* before it is ready for the market.

THE ART OF THINKING.

FROM THE FRENCH OF DEGERANDO.

(*Concluded from page* 134.)

THINKING, then, is facilitated not only by an immediate preparation, but by one more extended and remote. The first comprises silence and seclusion: certain times and certain places are particularly favourable to the development of thought. The most favourable *place* is that which is most in harmony with our habits and dispositions, which inspires calmness of mind, and which excites serious and uniform feelings. The *time* most suitable is that in which the mind, freed from the influence of the external world, feels all its strength, and is possessed of all its powers; and that where the mind, casting aside external influences, falls back on itself, and resumes its inward communings. The influence of circumstances becomes modified in different individuals. There are some whose minds demand almost an entire isolation from external objects, and whose thoughts arise in greatest number and rigour amidst the stillness and darkness of night; others, on the contrary, are aided in thinking by the presence of objects analogous to the subjects of thought, in the same way that a feeble and unsteady voice is aided by instrumental accompaniments. We should not, however, rely too much upon these extraneous aids, which we cannot always command, but rather acquire the habit of preserving our mental liberty in the midst of the tumult of the world and material occupations. The effect of these multiplied precautions, in order to obtain the self-possession of the soul, is, that we become peculiarly susceptible to external distractions. In estimating also too highly the value of these precautions—in thus isolating ourselves so completely—in thus concentrating the faculties, we are exposed to the danger of falling into vague reveries, or being carried away by enthusiasm which we cannot moderate, since we are not aware of its existence. Besides, this system of precautions is of extremely little value to those who have not undergone the necessary mental discipline before alluded to; nay more, these very precautions themselves not unfrequently serve to increase a state of mental agitation, if the soul nourish in itself the germs from whence it springs. The most violent passions are sometimes nourished in solitude; and the world has witnessed the spectacle of an army of anchorites issuing from the desert, and spreading disorder through an empire (the Byzantine). It is in the very sanctuary of the mind that the law of silence should be observed—there, that all the elements should be disposed in a regular harmony—there, that freedom should be complete—and there, that meditation should receive all the aid of the gravest and sweetest images. If the mind, by this union of precaution and care, once becomes capable of this noble mental action, the Art of Thinking will become an easy exercise, and all its fruits will be attainable; unexpected inspirations, more valuable than any extrinsic counsel, will often spring up. We must have confidence in our own nature, and trust to the teachings of our own experience.

One of the earliest truths that will thus develop itself is, that, in order to think to advantage, it is not desirable to fatigue and torment the mind with too much effort. Meditation is the parent of all vigorous thought and deep emotions; but both the one and the other should spring up naturally in the mind; we may indeed facilitate their birth, but not by agitation and constraint; while the energy of these mental manifestations will be in proportion to the spontaneousness of their issue. The art of governing the mind does not consist in oppression and violence, but in a wise and calm impulsion. All moral thinking is an intercourse of the mind with itself. It questions itself, and should wait the reply, and receive it with confidence and with entire good faith; there should be no suggestion of the reply, *for we learn only what we have a sincere desire to learn*. All men have very nearly the same primitive or fundamental notions, particularly as regards moral subjects; the chief difference is, that some know how to cultivate and develop them, while others neglect and disuse them. That restless agitation of the mind which arises from our very anxiety to develop its powers, affects chiefly those inexperienced in the art of thinking. There is nothing more difficult of comprehension than a mental state of calm activity, because there is nothing more difficult than complete self-possession in the midst of action; we pass from sleep to agitation, and fall again from agitation into sleep; the impatience of success makes us blind to the true means of attaining it.

There is no successful thinking without *method*, which is rendered doubly needful in moral meditations, since the mind cannot here rest on any extraneous aids, and is therefore in constant danger of falling into vague incoherency. This method, however, need not have all the vigour and precision of science, for this would entail upon it something of the dryness of science; it should be natural and simple, in order to allow entire liberty to the mental movements, and to the springs of emotion in the heart; it consists at first in dissipating the clouds in which ideas are usually involved, in clearly distinguishing them, in distributing and arranging them, and *in clearly discerning the end of thinking itself.* If this be perfectly apprehended, precise views will spring up in abundance; as in Geometry, when the position of the problem is once established, the means of solution readily and naturally present themselves. Method will lead to the discovery of those *parent* thoughts, which contain the germs of numberless others, and at the same time enable us to seize their connecting links; it will fix the rank and relation of each separate consideration—reduce to unity the scattered notions which float on the surface of the mind—assign to them a determinate place—make them reflect light on each other, and develop from them their practical applications. The mind has a tendency to fall into vague and idle reverie where the natural labour of thought is replaced by a soft mental voluptuousness, in which we cannot properly be said to think at all; we become, on the contrary, oblivious and dreaming, or rapt in a state of vain or false ecstacy. This is a dangerous state, and clearly arises from such a want of method as allows this state of confusion and anarchy.

The advantages of thinking do not follow immediately, nor after a first trial; the success obtained will vary according as we mix up with these secret operations of nature those varying states of the mind which often arise quite independently of the will. Perseverance is essential to success: both clearness and freedom will be gained by it, for it is especially necessary that on many points we should dwell long and patiently, in order that we may completely develop all that the subject may involve. *Barrenness of intellect is generally a consequence of precipitation.* In moral meditations, the tranquillity which attends steady perseverance is necessary, in order that from the conceptions of the reason may flow the emotions which should fill the heart. The spring of those emotions demands a certain amount of quiet contemplation; just as in the admiration excited by the highest works of art, time is required to develop all their beauty. The soul must have leisure to perceive the emanations of the true and the good; to feel them, appropriate them, and transform them, as it were, into its own proper substance. There is even danger in considering too many objects; each should be thoroughly digested, and, in developing itself, display all the fertility that belongs to it. Finally, in order that meditation should produce its greatest effect, it should be appropriately recapitulated, and presented in simple formulæ, that it may without difficulty be fixed in the memory, and be made easily applicable to the wants and duties of daily life. Method in these exercises will render this last operation easy, particularly if we once acquire the habit of carrying into practice the truths which flow from meditation. Contemplation and action too often assume a sort of rivalship to each other, and dispute possession of man. The former has its most zealous advocates with mystical writers; the other amongst men of the world. But the truth is, that each of these powers has need of the other; they are mutually strengthened and ordinated by their alliance; they mutually serve for preparation, check, and proof of each other. The contemplation of moral truth, when it remains idle and barren, both condemns and belies itself. We should not present to virtue voluptuous Sybarites, but courageous Athletics. Conceived in its proper spirit, thinking urges us to practical application, and longs for good actions. It inspires the necessary strength, and delights in the realisation of truths that have been conceived with so much happy feeling. Reciprocally, the practical application of moral truth becomes, what observation and experiment are in the physical sciences; it controls, determines, and circumscribes what, in conception, often appears vague and incomplete. It controls the imagination, and forces it to regulated movements; it foresees and corrects the wanderings and hallucinations of enthusiasm, generally pure and innocent in its origin.* It alone can teach us, that those meditations, indulged in with so much delight, have brought forth moral truth, and feelings that have penetrated the heart, and there taken sure and deep root. Nothing so effectively cures the afflictions of the heart, and dissipates that grave and depressing melancholy to which, perhaps, all are more or less subject, than the exercise of the great law of duty. We not unfrequently find ourselves incapable of thinking or feeling; at such times we should *act*, and *do good;* we find that the depressed faculties soon regain their natural vigour. Besides, there are always involved in our conceptions of duty, conditions only fully understood by those who have essayed to put them into practice. It is in the field of action that we estimate difficulties, discover obstacles, and learn the value and strength of particular motives. It is there that we thoroughly learn to know ourselves, for there we are put to the proof. It is there, also, that we learn to preserve ourselves against the illusions of vanity—illusions which habitual contemplation too often tends to foster and encourage. After having *done* good, we return to a study of its laws with renewed ardour and increased pleasure; meditation is invested with a greater serenity of feeling by the approbation of conscience; and thus it happens that Vice perseveres in *its* course, because it is *blind*, and Virtue perseveres in *hers*, because she is *enlightened*. The most persevering sinner often curses and condemns his own weakness, yet seems as if constrained by some mechanical and foreign force; while the virtuous man increases in his love of it, by perseveringly practising it; the chains of the former go on increasing in weight and in strength, while the latter becomes free as the mountain air.

If we reflect on the nature of the obstacles which usually deter so many men from moral meditations, it becomes manifest that such obstacles do not arise so much out of the *nature* of the thing, like scientific and philosophical speculations, as from negligence and levity. Moral truths, unlike the lofty speculations of science, which often exceed the capacity of ordinary minds, are at hand—are familiar and simple; we do not *make* them, but simply *recognise* them, not by any extraordinary efforts, but simply by self-scrutiny and good faith; so that no man, whatever may be his condition or rank in life, is excluded from such exercises nor consequently from the aids they give to our moral development. The maxims of the earliest sages, which have been by ancient tradition handed down to us from the very cradle of civilisation, evince the most profound meditation on the destination of human nature; and it is no uncommon thing to find in the most obscure ranks of society individuals with very little acquired knowledge, who, nevertheless, possess an almost marvellous clearness of vision; and, thanks to this interior education, which is the result of patient thought, speak the language of virtue better than men of the world, who are so often vain of their knowledge. These men, simple and honest, may be incapable of *expressing* their thoughts; their meditations have not been conducted according to any prescribed rules and forms; but they have acquired the habit of diving deep into the recesses of their own minds *with fixed honesty of purpose.* The tumult of the world and the agitations of vanity have not interfered with this self-study. They learn much in a short time under the guidance of this greater teacher of man; they learn, at least, enough to enable them to recognise the good, and to love it.

LONDON AND ITS FOOD.*

The problem of how the vast population of London can be fed daily is certainly one of startling interest. Have our readers ever thought with wonder and perplexity of the means by which this mighty city is supplied with food? Have they ever calculated, or tried to do so, the amount consumed in one day? If they have amused themselves by investigating this subject, they will turn with great pleasure to Mr. Dodd's interesting statements and statistics. He has given us a volume full of carefully-collected facts, and of very readable matter; and a glance at the table of contents will show its variety and scope. In the first chapter we have the subject briefly treated on broad principles, as behoves a political economist. Then follows the Food of London in Past Ages, the influence of railway on the food supply—corn and bread, cattle and cattle-markets, dairy produce, Billingsgate, Covent-garden, colonial produce, and London beverages, and divers other topics connected with creature-comforts, all admirably handled. Instead of taking up the book for the purposes of criticism, we shall just glean from it a number of facts which may amuse, surprise, or instruct our readers, and tempt them to turn to the volume itself for further information. Let us begin with bread. There is no large bread factory in London, no great baking-firm with whose name we are familiar, but of bakers'-shops we can boast 2,500 at the present time. The majority of the bread consumed in London is made as follows:—

"Boiled potatoes are mashed with a little water, flour, and yeast, and the mass is left covered up for some time to ferment. Then it is brought to a liquid condition with water and strained through a sieve. Anon they pour it on a mass of flour, and mix it with the hands, and the 'sponge' thus produced is allowed to remain several hours to 'rise.' At a certain stage in the process the 'sponge' is softened by water, in which salt and alum have been dissolved, and mixed into a paste, more flour is added and well mixed up with the paste into dough. Then follows the kneading by a man 'straddling and wriggling on the end of a lever or pole;' the dough is separated into portions large enough for loaves, which in due time are placed in the oven. Much of the difference between common and fancy bread is due to an alteration in the mode of placing the loaves in the oven."

Baking is a very unhealthy trade; the journeymen work too long, and their health is injured by high temperature. Mr. Dodd says:—

"If the bread eaters will have 'hot rolls' for breakfast, and 'new bread' for tea, the bakers must work at night to prepare the rolls and loaves; and it thus becomes a contest between the consumer's wishes on the one hand, and the baker's independence on the other; the latter gives way, and hence the poor baker works while others sleep."

He has his revenge, however, if that is any satisfaction to him; for few people can eat "hot rolls" with impunity! Londoners do not eat biscuits to any large extent. In peaceful times, the quantity of sea biscuits made annually has been estimated at 60,000 tons, or 124,000,000 pounds. During war time, the trade in biscuits is "stupendous."

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* The Food of London.' By George Dodd. Longman.

The use of alum, and the deficiency in weight, are two crimes to be laid at the door of most London bakers. The former will probably be put a stop to ere long, and housekeepers might avoid the latter fraud by insisting on seeing all their bread weighed.

With regard to the supply of meat for London, it is supposed that 1,000,000 bullocks and 4,000,000 sheep, all living at the same time, are destined for the dinner-tables of the metropolis.

"There are twice as many oxen and sheep always existing, destined for London consumption, as there are human beings in London—five millions for two millions and a half."

Mr. Dodd gives a copious history of the meat markets; but it will be pleasanter to pass them over, and come to the dairy produce. The number of cows reared for supplying London with milk is 24,000; each is supposed to yield nine quarts on the average daily; the quantity of milk consumed is about eighty million quarts annually, for which the consumers pay not less than £1,600,000. It should be mentioned that these statistics are not very sound, since there is no certain data for the calculation. The railways are daily bringing larger supplies of milk to London; and it is estimated that in 1853 more than 3,000,000 quarts were sent to us in this way.

"When the *Lancet* commissioners examined London milk, they purchased small quantities from twenty-six dairymen; and, rather to their surprise, though of course to their satisfaction, they found twelve of them to be genuine; two had some of the cream removed; the rest were adulterated with water, to an extent varying from ten to fifty per cent. No adulterant was detected except water. All these specimens were purchased at the west-end of the town."

It is supposed that for the butter supply to the London market, upwards of 160,000 cows are needed. From three to four million lbs. are sold annually at Newgate, "but the greater portion of the supply does not reach any of the public markets." Out of forty-eight samples examined by the commissioners, it was found that nearly one-fifth of the whole weight consisted of salt and water; potato-flour has also been met with.

Cheese is more in request than butter among our labouring population; and this, Mr. Dodd tells us, is not to be accounted for by the mere difference of price. Cheese is very nutritious, and working-men have generally good digestions, and find it a valuable article of food.

It is supposed that of eggs our consumption in the United Kingdom is 1,500,000,000 annually, of which 900,000,000 are produced in Great Britain. Reckoning them only at one halfpenny each, the annual cost amounts to £3,000,000. From eggs we naturally pass to poultry; and as Mr. Dodd dismisses fowls somewhat summarily, we will do so likewise, and extract, instead, a few noticeable facts about the goose. Enclosure Acts have interfered, it seems, with their liberty. "Some of the commons of Wiltshire, now enclosed, were formerly grazing-grounds for thousands of geese belonging to different owners; each owner had his own mark impressed by a punch on the web between the toes of the birds; and thus, though many flocks intermingled, each goose was easily identified; they were attended by goose herds, whose duty it was to watch over their safety." At Michaelmas-time, there is always "an amount of slaughter," especially in the fens of Lincolnshire.

"The fatteners pass unremitting attention to the wants of the geese—classing them according to their condition; keeping them always clean; feeding them three times a-day, alternating dry with soft food; and supplying them with good water and an exercise ground."

From poultry Mr. Dodd passes on to fish, and tells us that, although the denizens of the deep grow ready to our hands, "there may be such a thing as fish-culture as well as corn-culture." Singularly enough the fecundated eggs or roe of the fish may be packed in sand in boxes and conveyed from place to place, or kept in rooms; so that rivers may be stocked with fish not before contained therein. By this means many rivers in France are now being artificially stocked with trout.

Billingsgate, as our readers know, is now, and always was, the principal fish market in London. For eight hundred years it has held its ground against all rivals, and in the early morning, when the "mighty heart" of the metropolis is lying still, one of the busiest and most exciting scenes in the world is enacted there:—

"Fishing vessels and railway vans arrive as near the spot as possible by five o'clock, to catch the prime of the market. The salesmen place themselves at their stalls; the porters bring in the fish, brushing ruthlessly past any idle lookers-on; and the fishmongers arrive. All the best fish are displayed and sold first. The bargains are soon made; for both salesmen and shopkeepers contrive to ascertain the state of the market, and the fishmongers carry away their purchases in the carts which, for want of sufficient accommodation, blockade Fish-street-hill, as far up as Gracechurch-street."

Mr. Dodd gives us a curious extract from a pamphlet published in 1632 about the "fair sex" engaged in the Billingsgate trade:—

"These crying, wandering and travelling creatures carry their shops on their heads, and their storehouse is ordinarily Billingsgate or the bridge-foot, and their habitation Turnagain-lane. They set up every morning their trade afresh. They are easily set up and furnished, get something, and spend it jovially and merrily. Five shillings, a basket, and a good cry, is a large stock for one of them. They are merriest when all their ware is gone. In the morning they delight to have their shop full, at even they desire to have it empty. Their shops are but little, some two yards' compass."

Such a book is full of facts important to the statesman and the philanthropist, and highly interesting to the merely statistical inquirer.

TEA IN RUSSIA.

Tea, which is largely consumed in Russia, is a carefully protected article. The Tea trade between Russia and China is carried on exclusively overland *viâ* Kiahta, and is in the hands of a very limited number of merchants. The frontier town of Kiahta is situate in the midst of a vast desert at the extremity of two immense empires, and the tea has to traverse more than 7,000 English miles before it reaches Moscow, which may be considered the centre of its distribution. Importation by sea is prohibited in order that the overland trade may be supported, and whilst Tea of a fair quality sells in London for 80 or 90 kopecks the pound, Tea of the same quality costs in Russia 2 or 2½ roubles, notwithstanding the fact that the duties levied in England and Russia are, or at least were till lately, pretty nearly the same. This enormous difference of price of course leads to smuggling on a most extensive scale, and in spite of the vigilance of the police little else than smuggled Canton Tea is drunk in Poland, and the Western provinces of Russia. It used to be thought that the Caravan Tea was of a different and very superior quality to the Canton, and that to this circumstance its higher price was referable. It appears, however, that the two sorts come from the same plants and the same plantations, and the differences in quality are referable to the periods at which the leaves are gathered.

DICKENS AND THACKERAY.

There is a vexed question in literature about the relative excellence of Dickens and Thackeray; and the principle upon which it turns is not very remote from this comparison between Robson and his fellows. Thackeray was a great anatomist, and Dickens is a great painter; and it merely depends upon a man's preference for a dirty but necessary department of science to a delightful art, whether he prefers the former or the latter novelist. Thackeray dissects the human heart, and (to quote Mr. Sala's words) proves himself master of all the petty meanness, the crawling spites, the grovelling desires, the pettish caprices, all the spasms of malice, of envy, and of hatred, &c.' Dickens, on the other hand, idealises humanity, and sheds around our faulty nature the dazzling halo of his genius. The one is Mr. Partridge delivering a clinical lecture in his anatomical school, cutting and hacking with marvellous skill, in garments stained and odorous with the work; the other is Raffaello Sanzio, painting with a pen instead of with a pencil. The one addresses the brain, and the other the heart; but there is more—Oh, how far more!—intellect in the heart than in the brains. What is the result in the case of these two novelists? Why, the one has many compeers, and some of them (Swift, Sterne, and Fielding) are superior to him; but the other stands alone in literature.—*Critic.*

CHILDREN, AND HOW TO MANAGE THEM.

A LITTLE book under this title has come under our notice. It should be in the hands of every parent and teacher; for though it enunciates no new doctrine, it brings together a complete string of pearls of thought, embodying the ideas of the best moralists upon this subject.

The following extracts will serve to show the spirit and ability of this excellent little work:—

"TRUTH.—Who does not desire to have that great blessing, a truthful child? But, oh! how few children are perfectly upright. Some writers, indeed, have gone so far as to say that all children are naturally liars. God forbid! Our own belief is that circumstances almost force children to become untruthful. Let us look at the delicate organisation of a young child—its tender frame—its susceptible mind—its utter powerlessness against tyranny — its weakness and its ignorance. Can we expect from children a nerve and courage we do not ourselves possess? Does the fear of man, with us, never bring a snare, or lead us into a breach of truth? Is it not cowardice?—contemptible cowardice? And if we matured beings feel a fear that leads us into error, how gentle should we be to the young who suffer from it.

"A mother may do much to make her child truthful. Her example will do much. If she is habitually open in her conduct, if her child never hears from her lips 'Don't tell papa,' if he never sees a lie acted, this will do much to teach him to value truth.

"But more is needed. A mother must not content herself with saying 'I insist on your speaking the truth, it is wicked to tell a lie;' but she must show that no piece of childish wilfulness—no amount of mischief that might accidentally be perpetrated, is to be the cause of such severe punishment as a falsehood, however trifling. Indeed, it is unwise to punish *any* accident. Even if your best dress be spoiled by the careless upsetting of an inkstand, if your child's *intention* was to help you, look at the intention and not at the consequences, however inconvenient. Your child's truth is of more moment to you than all the dresses in Regent street. Do not, therefore, terrify the poor little thing, who is already probably sufficiently grieved, by flying into a passion, or punishing it. Show your sorrow—speak of your regret; your child will sympathise with you, and be more careful; but never terrify it into telling a lie, or make no distinction in your punishment of a deliberate falsehood, and a childish, however wilful, fault.

"Encourage, in every possible way, a love of truth. Foster the struggling virtue as earnestly as a good gardener would the tenderest hot-house plant. Let no cold blast of harshness check its growth—let no angry tone blast it. Let assurance of a perfect forgiveness of any error short of falsehood help the feeble resolution to confess the fault; and if you do promise forgiveness, keep your own word, in the spirit as well as the letter. Let pardon of a fault imply forgetfulness of it.

"Never doubt a child's word until you have proof that its word is not sacred. By giving great importance to the inviolable nature of a promise, you will succeed in impressing the child's mind with the same feeling. 'Are you sure, my dear, quite sure you did not break the glass? Remember, if you have done it, and tell me, I will not be angry; but if you assure me you have not I shall believe you until I find you do not speak the truth. Then mamma *would* be sorry, for she could not believe her little boy any more. Think again, are you quite sure?' Some such speech, with action to correspond, will tend to keep your children in the right path.

"One word more. Do not indulge in hasty, thoughtless, accusation of either children or servants, or even in too determined suspicion of them. Never condemn without open examination. Guilt is sure to develop itself some day; never, therefore, risk injuring an innocent person by punishing him for an assumed fault, however strong the probabilities may be of his having committed it. Remember, it has been frequently proved that perfectly innocent persons have even been hung on circumstantial evidence.

"Moreover, children are keen critics. Let them once be sensible that you have committed an act of injustice, and much of your influence over them is destroyed. Children are rarely treated justly, they are either petted too much, or they meet with undue harshness. But they have inalienable rights, which ought to be as much respected as those of grown-up persons, more so, indeed, since they cannot defend them; and, therefore, parents ought to study, above all things, to be perfectly just to them; not one day allowing that which they prohibit on another, or acting so as to lose their children's respect, but to let all their conduct to them be *even, fearless,* and *truthful,* practising themselves the uprightness they try to inculcate."

"SERVANTS AND THEIR INFLUENCE. —As long as servants continue the uneducated beings they are, they are most unfit guardians for children; and no true mother will, if she can possibly avoid it, confide her children, even for a few hours daily, wholly to the care of the nurse. How much less, then, suffer a young and ignorant woman to become the directress and mistress in the nursery, that too many nursery-maids are. Many are unfit for the charge; they alternately indulge and punish the children, coax and terrify them, teach them to tell falsehoods to parents, to conceal some neglect on their part; and act so that the children's minds never fairly recover from the hateful effects of their lessons. Even more; some are wicked enough to frighten those tender minds with horrible stories when, perhaps, in a dark room, and at night, until, in many instances, permanent derangement, or, worse still, a life of mental feebleness, has ensued. Even death itself has resulted from the terror caused by these wicked inventions. Let no mother suffer a servant to usurp either her place or her authority with a child. Even when no harm is meant, the ignorance of a young, inexperienced girl will lead her into error; and a mother should be constantly at hand to protect, to teach, and to train her own child; to lead the young thoughts to pure and holy subjects, to check the first indications of error, and to guard its body and mind from injury. As, however, there are positions in which a mother is compelled to confide her child to the care of a servant, her choice cannot be too carefully made. Whatever the personal sacrifice, in order to afford good wages to a good and true nurse, the sacrifice ought to be made. She should be prefectly healthy, neat, and sober; pleasant in face, cheerful in manner, active, and, above all, truthful. Give her to understand, on first entering your service, that you can pardon almost anything but a wilful lie; and that to utter one, or teach your children to utter one, will insure her instant dismissal. On such points be strict; but to accidents, and the failings inevitable to human nature, be lenient. Let the poor girl have a little leisure while you take her place in the nursery, if only for half-an-hour, after the children are in bed; let her have an occasional holiday, and proper opportunities of going to church. Take a kindly interest in her welfare, and do not be too exacting to poor human nature. Above all, if you are fortunate enough to have a servant who will speak the truth herself, and teach your child to speak it, show that you value and appreciate her conduct.

"Never allow children to be rude or domineering to servants, or to receive any benefit from them without acknowledgment. Neither should they be suffered to give unnecessary trouble in dressing or walking. On the other hand, the familiar way in which servants are sometimes allowed to speak to children, is injurious to both parties. Too much familiarity is far from desirable. To address the children of their mistress by the Christian name only, is an impertinence which ought, at once, to be checked. Teach your children to honour the conscientious servant, *in her place;* but, on the other hand, maintain *their* self-respect and dignity, of which even young children have sometimes more than their elders imagine.

"'What will you make your son?' I once asked a very clever woman and a most admirable mother. 'I will try to make him a man and a gentleman, and then he may make himself what he pleases.'

"She was right. It is of more consequence that a child should be brought up to do his duty in the station of life into which it shall please God to call him, than that that station shall be some particular one of his own choosing.

"I have given a few brief hints as to what the training of children ought to be. All I would say in conclusion is, do not expect too much from your children—they are, like yourselves, human and fallible.

Be to their faults a little blind,
And to their virtues very kind,
You'll clasp a padlock on their mind.

"Lovingly and trustingly sow the seeds of virtue in their minds; and though you may not, at once, see the fruit of your labours, remember the promise, 'Be not weary in well-doing; for in due season ye shall reap, if ye faint not.'"

The authoress has evidently bestowed much thought upon the subject; and writes with all the inspiration of the maternal heart. We can most conscientiously recommend this pearl of great value, but of small price, to all who, having children, are desirous of knowing how to manage them.

THE LAND, AND HOW TO MAKE THE MOST OF IT.

At a former meeting of the Council of the Royal Agricultural Society of England, Mr. Chadwick made the following important communication. It is interesting to the cottage gardener and to the farmer; and, indeed, important to every one of us.

Mr. Chadwick said—May I ask the favour to be permitted to submit some suggestions to persons who have adopted the principles of liquified manure cultivation, now, I am glad to state, so far extending as to preclude individual communications, even to those with whom I am personally acquainted, and who have acted upon my recommendations. The suggestions relate to the frequency of the applications of the manures. In recent times, the "lasting" manures have enjoyed extensive popularity. A dressing which served two years, and much better if it serves three, is deemed sound agricultural economy. Thus manuring with solid bones was once preferred; but this practice has been broken in upon by breaking the bones, and still more by pulverising them; and by the experience of immediate and more heavy as against the lighter, though more lasting, production.

With the farm-bailiffs of the older habits, who are accustomed to deem only that as manure which is to be moved by the spade or the fork, it is a great upturning of the ideas and of practice, to treat, as I have presumed to do, that only as economical and proper manure, which is only to be moved by the spoon or the scoop. But eminent agriculturists have agreed with me, and have now moved many of their farm bailiffs, who had been educated to give one dressing for two years, or one dressing for a season, to give—four—eight—and even ten dressings of liquified and diluted manures.

The grumblings, and this "everlasting work of dressing," "which would be sure never to answer," have been generally silenced by successive augmentations of crops. But even with yields 45 bushels of wheat, where 22 and at the utmost 30 had been got before; with even ten dressings instead of one; with double, treble, and even with quadruple crops; I have still to present myself with an aspect of dissatisfaction, and make remonstrances against remaining sins of waste, and talk even of this practice as backward. I have visited the farms of forward and successful agricultural improvers during the last year and the year before, who have put their farms under good and tolerably complete distributory apparatus, who were still using guano or other artificial manures, whilst they had near the cattle-sheds heaps of decomposing dung which ought not to have been there, and whose liquid manure tanks were stinking with the escape of the products of decomposition—denoting the extent of waste which is preventable by putting the manure in its right place.

One eminently successful improver is a guano merchant, and is to be excused for displaying to the farmers a liquified application on his farm, the powerful effect of his commodity. Another farm manager has also excusable prepossessions in favour of special manures, which he has been moved to try. But the "opinion—evidence," and the particular examples to which I advert, and the addition of any imported stimuli by the managers, are open to objection, whilst the farm-yard itself presents in the unused dung, and in the products of decomposition evolved from the stagnant contents of the tank, the demonstration of the presence of unused or misused manure.

The empirical demonstrations of the absorbent and retentive power of soils which I obtained from trial works on the Manchester canal in 1846-47, such as the marks of a leaky hose visible on the grass in the second year after a single dressing, corroborated and extended by the scientific researches of Professor Way and others, have been subsequently corroborated practically on a number of the liquified manure farms. Sometimes the corroboration has been accidental. Thus on one farm very capacious tanks were filled by the solid deposit, and they were seen to be overflowing and the unused liquid manure running down a lane. The farm manager was for the removal of the solid deposit by hand labour and cartage, but the owner suggested that the tanks might be more conveniently and cheaply emptied by pumping the contents on some adjacent fallows, to which "it could do no harm," and, although it was in the winter, if the rains were not so very heavy as to wash it all away, it might do some good; and this course was taken, and the succeeding rains were very heavy, but to the surprise of all the summer crops everywhere displayed "to a splash" the effects of the application of the manure in the preceding winter, affording on a large scale a demonstration that liquified manures are not held in mechanical suspension, as the Baron Liebig and other patentees of solid manures have assumed and alleged, but are at once received in chemical combination. A familiar proof of the combination is the immediate suppression of offensive smells even from decomposing manures which is so important for sanitary objects, as well as for agricultural economy, in the prevention of the further waste of manure.

Mr. Walker, of Newbold Grange, near Rugby, who receives nearly the whole of the sewerage of that town upon his own estate, has given important demonstrations of the principles for which I have contended. Every day except Monday throughout the year—and except days of very severe frost—the sewerage manure is applied to some part or other of the land by steam power, and hose and jet as distributory apparatus. By the total abolition of cesspools, and of brick house drains or brick sewers of deposit; and the substitution of drain pipes and pipe sewers properly adjusted to the flow—and which are therefore self-cleansing—all the refuse of the town is discharged at a rate of upwards of two miles an hour, and before it can enter any advanced stage of decomposition. The sewerage from 900 houses has some odour, though slight; but has not the odour of decomposition, and does not smell half so bad as the old cesspool matter of a single cottage, as any one who goes to the spot may convince himself. All the refuse matter of the town discharged into the house drains by 9 o'clock will, during nearly 300 days in the year, be upon the land, and not merely upon the surface, but in chemical combination with the soil of that portion of the farm to which it may be applied—freed from all odour, "disinfected," and preserved from all waste usually before 10 o'clock, or within little more than an hour. Usually—not many days afterwards, upon the grass land—the portions last irrigated may be discerned by the sheep and cattle, which have selected it and are feeding upon it. He informs me that when an accident has occurred to the engine, and the works have been stopped, in about three or four days bubbles of gas are evolved, and decomposition commences, that is to say, waste commences. Now it is this waste which it is of importance to avoid by the application of the manure as frequently as practicable, before the decomposition can commence. Since the manure tanks must be emptied, no great difference will occur in the total amount and expense of labour under proper arrangements, whether they are emptied soon or late.

Mr. Walker has applied the sewerage of 900 houses to about 600 acres. But he finds that pumping every day, except Sunday, he only gets about three dressings in the year all over the farm. He is, nevertheless, well satisfied with the result, as he obviously may be, in more than double crops in his cereals as well as his grass.. But if he were to renew the work he would, as I apprehend, give a more concentrated application, 10 dressings or upwards on a limited area. And the example affords an important demonstration that the complete sewerage of 900 or 1,000 houses, including the external surface washings of the streets and roofs of houses, may be absorbed, disinfected, and rendered productive on about 200 acres of ordinary land.

The other instances of the application of sewer water to agricultural production are generally, as at Edinburgh, Milan, the Clipstone Meadows, the Duke of Bedford's water meadows at Tavistock, are irrigations chiefly with the surface washings of the streets and the overflows of decomposed manure from cesspools, drains, and sewers of deposit, which is the strongest in periods of storm; but in the case of the sewerage of Rugby, from a general water-closet system and self cleansing pipe drains and sewers, the manure comes undecomposed—unwasted, chiefly from the interior of houses, and is the weakest in the periods of extraordinary storms. The manageableness of the sewerage without large reservoirs, or offensive marsh surfaces, like the plain water meadows; the manageableness on limited areas are matter of great importance for towns.

The Rugby experience demonstrates, that the sewerage of the metropolis may be utilised inoffensively, far less offensively than the manurings of market gardens, on an area of 50,000 or 60,000 acres, or 10 miles square, about the extent of the Plumstead marshes, or say a belt of land about a mile and a quarter wide, commencing, at the inner circle, about five miles from the centre of the metropolis. On such practical examples, what I wish to urge in respect to farm-yard manures is that the liquid manure pump should be kept going for the immediate deposit of the manure on some part of the farm or another; it will be better preserved on fallows than in the tank. In the tank, after decomposition commences, it not only wastes; but becomes a source of danger to the cattle in the shed; inasmuch as from the manner in which the tanks have been commonly constructed, they are too frequently retorts for the generation of noxious gases, and the drain from the shed serves as the neck of the retort, to convey the gases into the shed, where they are sure to operate to a greater or less extent injuriously.

In Flanders and Holland, where the sheds are kept remarkably clean, the escape of the concentrated gases from the long kept liquid manure of their tanks have in certain conditions of the atmosphere been productive of great mortality amongst the cattle. The long kept liquified manures convert the tank into as dangerous a common cesspool or fosse as such as those which pollute the air, and the interior of the houses, of Paris. In the new cultivation, ten dressings with liquified farm-yard manures has been deemed a maximum application. Yet to such an application a dressing of guano has been superadded, as I complain, whilst liquified farm-yard manure was in the tanks and might be made further available.

I rely upon the evidence of market gardeners as to an experience of many years for the fertilising power of farm-yard manures upon the same crops year after year; and the market gardeners to whom I have shown the results obtained on the new liquified manure farms, exceeding, as they have already done, all other agricultural production, deem that production as nowise extraordinary, nor will it be found to be so in relation to the green crops grown by market gardeners; and I rely upon the evidence of horticulturalists of practical experience and much superior production in quality as well as quantity, in asserting the expediency of far more frequent applications of liquified manure than has yet been dreamed of by most of the managers of liquified manure farms.

Horticultural experience justifies me in saying that not ten, but more than twenty dressings in the course of the season, properly applied, will be attended with remunerative results. The application of liquified manure to the cereals may be intermitted or moderated during the period of growth, to avoid carrying the vegetation too far, into stalk and leaf. But horticultural experience shows that when the leaves are withered and the plant is out of bloom and the corn is set, it should then be well fed to make the corn plump and heavy. If the soils are light and the weather dry, the food may be conveyed in the liquid twice a-week. It may be conveyed to the roots of the standing crop by a hose with lateral apertures. What I wish, then, to impress is *that it is more economical to have the manure on the land than in the tank; that all delay of the application until decomposition has commenced is wasteful and dangerous; that until the whole of the farm-yard manure is thus used up, any artificial manures are superfluous, and that they do not yet know how far it will go.* The information I have received warrants me in saying that the best of the liquified manure farms may by this course far exceed their present crops.

In answer to the inquiries of Mr. Slaney and other members, as to the expenses of the process, Mr. Chadwick stated that Mr. Walker had informed him that he estimated the establishment charges and working expenses of the new works, steam-engines, pipes, and labour of distribution, at £1 per acre per annum; but that was for pipes over double the area that would in future be used; and Mr. Chadwick said that according to the best of his information, 14s. per acre might be set down as the establishment charges and working expenses, including ten dressings during the season. The expense of each additional dressing of twenty tons of liquified manure (or watering with simple water) by steam power, was stated at about 1s. under ordinary circumstances. Where gravitation was obtainable for pipe distribution, the cost might be set down at from 7s. to 10s. per acre under ordinary circumstances.

A Popular Error Corrected.—A Western editor thinks that Columbus is not entitled to much credit for discovering America, as the country is so large he could not well have missed it.

EMPLOYMENT FOR FEMALES.

MR. BENNETT, the well-known watchmaker of Cheapside, has addressed a very sensible letter to the public papers, pointing out the practicability of employing females in the manufacture of watches, and thus affording remunerative employment to thousands of females who would otherwise be left to live miserably upon the scanty pay of needlewomen, or be driven to a sinful life as an easier mode of daily subsistence:—

"The pocket-watch is an article of commerce of universal demand. The sale can be increased to an indefinite extent in every corner of the civilised globe, if we will but produce a trustworthy timekeeper, at a very moderate price. The Swiss are our only competitors. But while the English first-class watch retains its old and well-deserved reputation, the Swiss are beating us in every market in the price of second and third class watches. They give our model, as accurately and of greater elegance, cheaper by thirty or forty per cent., duty paid, to our own doors.

"Their superiority arises from a system which is no secret, for I have recently laid it before many large audiences. Their admirable method of public education is one of the chief causes of their success. They know an ignorant can never be a skilful workman. The next cause of their superiority lies in a minute subdivision of labour, to which they attach the utmost importance, especially from the peculiar delicacy of touch possessed by the female hand over that of the more clumsy-fisted man. There are parts of the mechanism of such exquisite delicacy as to demand the nicest possible manipulation.

Why then, in our stupid prejudice against the employment of women, do we reject what will give us the maximum of quality for the minimum of cost?

Or why refuse the ready means that would enable us soon to compete with the Swiss both in the home and foreign markets? Last year only 186,000 watches were made in Great Britain, while the canton of Neufchâtel sent out 1,500,000! The manufacture has departed entirely from Paris, and we may dread a similar catastrophe for London, unless we reform our present unscientific plan. I am prepared to explain how this may be accomplished, the two prime requisites being a well-arranged system of education, like that of the Swiss, and the gradual employment of thousands of those women who are now forced to drag on a profitless existence on a pittance barely enough to keep a dog.

"This reduction of the price would so greatly extend the sale as to give additional demand for all those portions of the work for which the man's hand is best adapted, while to the women of London would be opened up a source of remuneration that would benefit alike the producer and the consumer.

"Its cleanliness and lightness would well suit the natural conformation of the woman's delicate fingers, and being done at her home would never be necessarily detrimental to the due performance of her domestic duties."

It would be matter of much regret if a suggestion so valuable should pass away, as many such suggestions do, with merely a few newspaper comments and commendations.

Some time ago, a respectable firm (we believe the Messrs. Chambers, of Edinburgh), pointed out the propriety of employing females in the art of wood engraving, an art easily acquired, and very remunerative to the industrious and the skilful. But we think that the idea has never been developed as it should have been.

If influential personages — among whom the Duchess of Sutherland and the Earl of Shaftesbury stand conspicuous—were to found an institution for promoting the employment of females in the various occupations for which they are eminently adapted, they would confer an immense blessing upon society, and save thousands of virtuous women from the worst ruin that can befal them.

In America, we believe, females are frequently employed in the setting up of printing types; and there are a few instances in this country in which the proprietors of local newspapers have instructed their daughters in the handicraft of "composing" types for the press.

What are the proprietors of *The Lady's Newspaper* doing? Why do not they take the initiative? Let them produce their paper entirely by females: let their journal be written, their drawings and engravings produced by females, and the types set up by females only. This would be an experimental step which would be undoubtedly successful.

The social advancement of women has always been a theme of much discussion. And in this, as in the question of national education, practical good has been lost amidst diversity and contention.

It is undoubtedly desirable to keep women womenly, and to guard against overstepping the bounds of decent propriety; and while cultivating the natural tastes and refinements of the sex, subdue as far as possible all that is coarse or masculine.

But the absence hitherto of any effort in a right direction has left the way open to an unchecked evil. Thus it is that woman becomes demoralised, and spreads a baneful influence over society. There are many sources of female employment not yet developed. And in penning these remarks we have been actuated by a desire to raise the subject in the consideration of mankind. We saw lately in the *Times* an advertisement somewhat to the following effect:—

"WANTED TWO HUNDRED POUNDS, to save 12 girls from ruin."

The advertisement went on to say that this sum of money was required to get the girls into an asylum where they would be provided for, and placed under moral restraint. This is trifling with a great evil. There are twelve hundred thousand women in this great kingdom, claiming help and guidance from the better classes of society. To teach woman independence, and to give her the means of its enjoyment, are alike necessary. We shall be glad to publish suggestions in aid of this great work; and we shall be much disappointed if the subject be allowed to fall into oblivion.

RESTRICTION ON THE SALE OF POISONS.

MRS. DOVE'S case backs up many others in teaching us that a much more stringent and absolute interference ought to be made with the distribution of poisons. We know that they may stray into hands that are untaught, careless, or guilty. There can be no difficulty in placing a very serious check. No man ought to be allowed to sell poison unless the purchaser brings an official "permit" from the police magistrate of the district, or from a borough or county magistrate where no police magistrate exists. The permit should state the exact quantity, and the name of the applicant; while the quantity allowed to him should be registered in the record of the magistrate's office. The necessity for this permit would never prevent the medical man from stocking his own laboratory, or from administering medicine on his own responsibility. The very necessity of applying for a permit would in itself be a powerful restriction upon an improper use of such dangerous and easily-hidden weapons. Supposing that no one was guilty in Mrs. Wooler's case, we still should have had some clue to the poison itself, and therefore to the hands that administered it, whether by mistake or otherwise. Supposing that any one was guilty, that person would have had to come before the police in order to qualify himself for obtaining possession of his instrument. Is it probable that in a case like that of Palmer, Monaghan, or Dove, a person contemplating the use of poison, would beforehand place himself in communication with the police? Palmer was a surgeon, and might possess poisons innocently in his profession; but the exact amount and relative proportion to the average of a man's general consumption of drugs would have been traceable by the police magistrate. The rule would at least secure the grand check of publicity, and before the fact.—*Spectator*.

THE MOON AND ITS MOTIONS.

A DISCUSSION has for some time been going on in the pages of the *Times* newspaper, through the letters of correspondents, the subject of debate being whether the moon revolves upon its axis. The discussion opened by a letter from one of the inspectors of schools, who ventured to doubt the accepted theory, and who therefore claims at least to be considered a man of original and independent thought. The *Athenæum* makes the following remarks upon the subject:—

"The inspector of schools will not give in. Letter after letter appears in the *Times* to prove that the moon does not turn on her axis. The controversy will be useful, because the inspector's mistake is one which so many have made and do make. He has not plenty of followers, because the world at large respects the opinion of those who have studied geometry, and is content to suppose they must be right on geometrical questions. But there are persons who wonder how it can be that the geometers are right and the inspector wrong in the present case. The difficulty is that the two rotations may be conceived by one act of thought, and effected by one apparatus, if desired. Persons who are accustomed to see a double effect produced by one process frequently find a difficulty in imagining the two effects separately. When a man walks round a circle, following his nose, he turns on his own axis, because he makes his nose point to all the points of the compass one after another. How can a nose first point north and then south without a right about face? But this double procedure is so usual and simple that it seems all one job. So that if the man wished to walk round the circle, and yet keep his nose turned towards a very distant object—say he wanted, without leaving the circle, to keep on inspecting a school three miles off—he would be sensible of the effort requisite to effect this departure from his usual mode of travelling, and would imagine that he had to make a new kind of rotation, whereas all he has to do is to remember not to make the old one, to which he is well accustomed. Again, the turning round the axis is unnoticed because it is gradual. But suppose a person to neglect the gradual turning on the axis until the necessity for it mounts up. When a point travels over the four sides of a square, it moves *round* the centre of the square, though not always at the same distance. Now, let a man walk round the square. When he comes to the corner he must make a quarter face, unless he prefer to walk sideways. And this he does four times. Now let it be a regular octagon: he makes an eighth of a face eight times. Next, a figure of sixteen sides: a sixteenth of a face sixteen times. Go on in this way, and as the sides become more numerous, and severally smaller, the turns become severally less and more frequent. Finally, at the limit, as the mathematicians say, the figure becomes a circle, the turning becomes gradual, and the successive rectilinear motions merge in a continuous circular motion. If our readers will ponder this explanation a little, they will probably arrive at the conclusion that a person who cannot make it out is not fit to be an inspector of schools. We bear, of course, no ill will to the unlucky speculator; but we must say we do feel for the teachers who are to be subjected to his overlooking, and to be judged of by his reports."

The following is Dr. Dion. Lardner's opinion upon the subject:—

"Considering that the proposition advanced by the 'Inspector of Schools,' is in direct contradiction to the conclusions of all the more eminent astronomers of the present and the last age, and that it relates not to a point of abstruse mathematical physics, but to one depending on the most elementary mechanical principles, it would be wonderful indeed if it were not completely erroneous. Now, although it certainly is so, it is very evident, from the matter of the various answers elicited, that, however universally the moon's rotation has been admitted, the reasoning by which it has been established still requires elucidation and development before its conclusiveness can be perceived by ordinary minds, and I think it would be more rational to supply such elucidation than to attempt to pooh-pooh the question. I am the more free to say this, as I have attempted myself to elucidate the point in more than one of my elementary works and public lectures, and I confess that something more seems to me to be required to satisfy common minds.

If a globe—take for example Wyld's great one, which stood in Leicester-square—be placed with its axis parallel to the axis of the earth, it will be carried round the centre of the parallel in which it is placed in 23 hours 56 minutes, presenting, like the moon, always the same hemisphere to the centre of the parallel. Now, the same reasoning which proves the moon's rotation must equally demonstrate that Wyld's globe rotates on that diameter which is parallel to the terestrial axis once in 23 hours 56 minutes. Can it be expected that common understandings will readily admit this upon the force of the received demonstrations?

"To take another illustration of this principle: a mountain—the Peak of Teneriffe, for example—is moved round the centre of its parallel of latitude, presenting always the same side to the centre. This mountain is not a globe like the moon, and has no geometrical line analogous to the moon's axis; but that does not affect the principle of the question. The same reasoning which proves the moon to rotate on its axis must establish with equal conclusiveness the rotation of the Peak of Teneriffe upon a certain line as an axis of rotation, that line passing through the mass of the mountain in a direction parallel to the terrestrial axis, the time of rotation being 23 hours 56 minutes.

"The point requires more clear exposition than it has yet received."

It appears to us that this discussion relates less to the facts of the case than to the meanings of the terms employed to explain those facts. If a body turns while it is describing a revolution in an extended orbit, can it be said to revolve upon *its axis*? We think so. What the moon does is precisely what the earth does—for the earth has its orbit of revolution as well as its rotation upon its axis. If we deny that the moon rotates upon its axis, we must also deny that the earth does so. And if we succeed in confusing the terms and ideas already received, what do we gain? Everybody who understands the subject at all, knows that the moon, as well as the earth, has its orbit of revolution as well as its axis of rotation, and that they both perform the latter while going through the former.

DIET, AND THE DIGESTIBILITY OF FOOD.

In connexion with the medical hints given in *Enquire Within*, we think the following hints by Jabez Hogg, Esq., F.R.C.S., published in his *Medical and Surgical Guide*, excellent:—

In the treatment of many diseases, attention to diet is of the utmost importance. It is very necessary in disorders of the digestive and urinary functions, in chronic or long-continued diseases of the assimilating or converting organs in which the appetite is impaired, or even decreased. The patient should be very particular in the employment of a diet neither improper from the quantity nor quality, as this would retard the best-directed efforts of medical aid.

Several kinds of diet are usually recommended in the various forms of disease, the most important being:—

Animal Diet.—This term is applied to a diet composed principally of animal food; but, in speaking of a diet of this kind, it is usual to permit the use of eggs, cheese, new milk, beef tea, mutton broth, and such like articles to be taken with a proportionate amount of animal food. There are but few diseases requiring a diet exclusively of this kind; the most important are—diabetes, scrofula, and those cases wherein it is desirable to combine a highly stimulating and nutritious diet.

Vegetable Diet is termed spare diet. This is used to indicate the employment of vegetable substances principally, not exclusively. It in general includes the use of fish, with a small quantity of poultry and butter. In full habits this diet is ordered, if apoplexy or gout is threatened; and by its adoption we diminish the quantity of nutritive matter supplied to the system, while we keep the digestive organs actively employed.

Milk Diet.—Besides cow's milk, this diet includes the use of farinaceous substances, such as arrowroot, sago, tapioca, rice puddings, and bread. Milk diet is ordered when it is necessary to support the system with the least possible stimulus or excitement. It is well adapted for inflammatory diseases of the chest, of the stomach, bowels, and bladder. After bleeding from any internal part, when the powers of life have been gradually exhausted, a light diet is very beneficial; it is also considered a preventive and curative of gout. In the diseases of children, especially those of a scrofulous nature, it is highly recommended.

Low Diet.—In acute inflammation, in fever after serious accidents, operations, and after childbirth, a low diet is absolutely necessary, consisting principally of slops, such as tea, weak broth, barley-water, and toast-water. Small quantities of milk and farinaceous matters, in the shape of gruel and arrowroot, are sometimes added.

Full, or Common Diet.— On many occasions, where it is desirous to restore or support the powers of the system, patients are permitted to satisfy their appetites with plain vegetable and animal food. In many indolent diseases, in some affections of the nervous system, as epilepsy, &c., and in convalescence after illness, this kind of diet is frequently of much service.

A physician observes:—"Many of our customs, manners, and habits are prejudicial to health. Some of them are physical, while others are moral in their effects. Nothing more plainly betrays our ignorance of even the principles of health, and at the same time our slavish submission to selfish indulgence, than the custom of *eating suppers*—by which we do not mean the mere eating a slice of bread and cheese, but of making a meal at that time. Instead of allowing the body, with its multifarious powers, to be refreshed by 'Nature's best restorer, balmy sleep,' and the mind to be relieved from care and thought, irritation, and excitement, the stomach is loaded with (probably) a heterogeneous mass of food, and the whole machinery of the inward man is forced into sluggish operation when the vital powers are at the lowest ebb; the brain, feverish and disturbed, sends forth startling visions and horrifying dreams until morning dawns, when the haunted imagination recovers itself, and is conscious of the mental and bodily vigour being rather exhausted than refreshed by the night's turmoil. We would not have touched upon this subject, but we are aware that —notwithstanding all the evils which are known to follow in its train—the practice of nightly repletion is still too common."

It now becomes our duty to inquire into the properties and effects on the stomach, of the articles of food employed to supply the waste of our bodies, and maintain us in health. The suitability of particular kinds of food to the varied constitutions of man is not made that study and science its importance deserves.

Milk.—This causes wind and acidity in some stomachs, which effects can be remedied by mixing about half an ounce of lime water to each pint. Milk, when it agrees with a person, is useful in scrofulous affections, and where debility and morbid sensitiveness exist, in early stages of consumption of the body, in cases of enlarged glands, diseased affection of the joints, and in continued rheumatism of the joints. A milk diet is not sufficient for any one having continued and active exertion, but it is for those who are invalids. Asses' milk is not so nourishing, but more easily digested than that of the cow. Goats' milk contains matter of a peculiar taste and odour, which requires an invalid to have good, pure air and some exercise to easily digest.

Raw Milk is not commonly used abroad, and we may observe that, when boiled, it proves more agreeable to the stomach. If, after boiling, it be put into bottles, and well corked, or in tins soldered up, it will keep during many months. Milk may also be purchased in small cases prepared for long voyages. This is made by gently simmering the milk until nearly all the water is evaporated; it is then cooled and kept carefully from the action of the air, remaining in a solid state ready for use; when required, a piece is put into the cup of tea or coffee. The most certain method for voyagers is to take with them a supply of patent concentrated milk or cream, which prevents disappointment at a time when it is impossible to procure so useful an article in illness, &c. Or an excellent substitute may be secured by laying in a supply of cocoa and chocolate, having the milk and sugar ready combined with them.

Skimmed Milk is more easily digested, and not much less nutritive, than that in the state as fresh drawn from the cow.

The article called *Sugar of Milk* may be purchased at any druggist's shop, and is occasionally used instead of milk.

Butter always irritates the digestive organs of those suffering from indigestion, and especially when on toast, or in a melted state. Butter is best when fresh, well made, and from a cow fed on grass. Salt butter is never so good as fresh, and yet a little salt on fresh butter facilitates its digestion. The utility of butter to the invalid can only consist in having a solvent effect on the bowels. It is generally thought better to prevent children indulging in this oleaginous matter, by placing before them plain palatable food, for which they have some liking, as milk and bread, oatmeal porridge, etc.

Cheese, when toasted, is more easily digested than when not so; the richer, and also the more mature it is, the better. Decayed cheese, in some cases, stimulates and assists a weak stomach in the digestion of food. Good ripe cheese contains a large amount of nourishment, and is, with a little home-brewed beer, a very wholesome meal. *Cream Cheese*, when fresh and untainted, is as digestive as ordinary ripe cheese.

Whey is an excellent drink in all febrile disorders, at the same time it is nutritive and dilutent to the body. *Wine Whey*, taken warm, promotes the action of the skin, and is a valuable domestic remedy in *colds* and *influenza*. *Tamarind Whey* is preferred by some people; it is prepared by boiling two ounces of tamarinds into two pints of milk, and then straining it through a sieve. Cream of Tartar also makes an excellent whey.

Eggs.—The yolk is best suited to a very delicate stomach when lightly boiled, but the white, even in a pudding, may prove unpleasant to it. The entire of a raw egg is one of the most easily digested articles of diet known. Eggs lightly poached are preferable to boiled ones, while those hard boiled are the worst to digest; still, to persons undergoing great exertion in the open air, a few hard-boiled eggs prove an excellent substitute in the absence of a regular meal; adding a little salt assists digestion. Eggs ought to be used very fresh, as they speedily, from their nature, undergo decomposition. Immersed in vinegar and water or quick lime they will keep for some time. The eggs of the duck and goose are less digestible than those of the hen and wild birds.

Fat is not so digestive as lean, nor does it possess nutritive properties; it is called a calorifiant, that is, maintains the animal heat; thus we find the inhabitants of cold climates indulge most enormously in it, while in warm climates it is neither relished nor does nature supply it. It is useful as a dilutent of the other portion of the food.

Bread baked in small loaves as toasted before a hot fire, and not eaten new, being freed from the effects of fermentation, is the most easily digested. Bread containing bran is occasionally useful for irritating the stomach and bowels, and thus preventing constipation; but, if continued, the coarse particles are apt to lodge in the intestines, which is followed by severe derangement, requiring medicine for their removal. To those much troubled with indigestion, fresh biscuits preserved from the air or damp are the most suitable, especially those made for use at sea.

Toast.—In the act of toasting bread we wish to get out the water, which makes the bread cold, waxy, and heavy of digestion. Perhaps we shall be best understood if we first explain what makes bad toast of a slice of bread, or rather what makes it no toast at all, but merely a piece of bread with two burnt surfaces, more wet and waxy in the heart than ever, and which not a particle of butter will enter, but only remain upon the surface, and if vexed with additional fire, turns to a rancid oil of the most unwholesome description. If the slice of bread is brought into close contact with a strong fire, the surface becomes covered with, or rather converted into charcoal before the heat produces any effect upon the interior of the slice. This being done, the other side is turned, and converted into charcoal in the same manner. Charcoal, as everybody knows, is one of the worst conductors of heat. It is of no consequence whether the said charcoal be formed from wood, flour, or any other substance, for its qualities are in every case the same. Now, when the surfaces of the slice of bread are charred over in this manner, there is an end of toasting, as no action of heat can be communicated to the interior, and not one drop of water can be evaporated. In this state the slice of bread may be wholly burnt to charcoal; but until it is altogether so burnt, the unburnt part will become always more wet and unwholesome. There is an illustration of this in putting a potato in the middle of a strong fire in order to be roasted. If the fire is but hot enough, a potato the size of one's fist may be burned down to a cone not bigger than a marble, and yet that cone will remain hard and scarcely warmed.

Chestnut-brown will be far too deep a colour for good toast; the nearer you can keep it to a straw-colour the more delicious to the taste, and the more wholesome it will be. If you would have a slice of bread so toasted as to be pleasant to the palate and wholesome to the stomach, never let one particle of the surface be charred. To effect this is very obvious. It consists in keeping the bread at the proper distance from the fire, and exposing it to a proper heat for a due length of time. By this means, the whole of the water may be evaporated out of it, and it may be changed from dough—which has always a tendency to undergo acetous fermentation, whether in the stomach or out of it—to the pure farina of wheat, which is in itself one of the most wholesome species of food, not only for the strong and healthy, but for the delicate and diseased. As it is turned to farina, it is disintegrated, the tough and gluey nature is gone, every part can be penetrated, it is equally warm all over, and not so hot as to turn the butter into oil, which, even in the case of the best butter, is invariably turning a wholesome substance into a poison. The properly toasted slice of bread absorbs the butter, but does not convert it into oil; and both butter and farina are in a state of very minute division, the one serving to expose the other to the free action of the gastric fluid in the stomach; so that when a slice of toast is rightly prepared, there is not a lighter article in the whole vocabulary of cookery.

Yeast Dumplings,—are only good for those with strong digestion, and who have laborious out-of-door employment.

Vermicelli and *Maccaroni* are made from a hard, small grained wheat; the flour is made into dough, and dried until hard; whether simply stewed, taken with the gravy of meat, or used as a vegetable, they seldom disagree even with a weak stomach. If boiled until soft, and eaten with French mustard or jam, it makes a soluble and wholesome dish, which may even be taken by invalids.

Puddings are usually better than *Pies* for those affected with indigestion, especially if made with milk and eggs, instead of butter, lard, suet, or treacle. Baked puddings are not so good as boiled, and those done under meat are objectionable for weak stomachs. The simplest form of constituting pudding is that of flour, eggs, and milk. Pancakes fried in fat are not good.

(*To be concluded in our next.*)

PETROLEUM, OR THE ROCK OIL OF PENNSYLVANIA.

THOUGH the introduction of petroleum, or rock oil, into the domestic purposes of life is of so recent a period as to seem but of yesterday, yet its discovery and uses have been familiar to the natives of America for centuries; and indeed has been commercially known for years as "Seneca oil," so called from the Seneca tribe of Red Indians, one of the confederacy known in history as the "Six Nations," and whose hunting-grounds were situated on that branch of the Alleghany river, in the State of Pennsylvania, where the petroleum is found, and called, in consequence, Oil Creek. The Indians had known and used this oil for ages, not only as a source of light and heat, to illumine the council-lodge and cook the spoil of the hunting-path, but as an invaluable remedy used as an embrocation in sprains, lumbago, and rheumatism. For ages the Seneca Indians had observed this fat, unctuous oil exuding from the adjacent soil, and floating down in the form of a thick scum on the surface of the river, impregnating the air and the water for miles in every direction. Having no better means of collecting this valuable commodity, the Indians laid their blankets on the surface of the river, and when they had become sufficiently saturated with the subtle oil wrung them out into gourds, or any convenient vessel large enough to hold it till required for use. To this extent, as a rude means of light and a repulsive agent in medicine, petroleum was known to the surrounding colonists; but it was not till the year 1859 that its real importance and value became suddenly impressed upon the mind of the shrewd American people. In the month of September of that year, Colonel Drake, of Titusville, a township on the banks of Oil Creek, while digging on his estate for a salt spring, suddenly struck, at the depth of seventy feet, on an oil vein, as it is called, and found himself at once the possessor of what appeared an inexhaustible source of wealth. The news of his extraordinary good fortune spread like wildfire, and eager speculators rushed from all quarters to participate in the colonel's prosperity; and in a remarkably short time numerous wells were sunk in the same locality, and Titusville soon became the centre of an immense mining district.

The stories connected with some of the speculations would be deemed fabulous were they not supported by facts, by figures, and by living testimony. Some fortunate speculators have discovered oil at the depth of a few feet below the surface; others have toiled to a depth of 500 feet, and then, when on the point of giving up the task in despair, another blow with the axe, another turn of the screw, and a torrent of the finest oil has gushed up to reward his disappointments and cares. One spring called the Empire well yields more than 7,000 gallons a day: one poor man, who had struck a splendid vein, had no means to collect or vessels to receive his wealth, and was obliged to see his property run into the river at the rate of a *hundred gallons a minute*, and flow in waste to the ocean. The oldest well in Titusville realizes 500 gallons of the purest oil a day; the Hibbard well produces 400 gallons daily, and the M'Clintock well throws up from 1,000 to *twelve hundred gallons* in the twenty-four hours; while in an adjoining county, farther up the Alleghany, there are seventeen wells in one locality, which jointly produce the enormous amount of *ten thousand gallons a day*, and this independent of nearly a hundred other wells in the same township. The far-famed Oil Creek is an ordinary stream, about 100 feet deep, flowing for about seventeen miles in a southerly direction from Titusville to Oil City, at which point it falls into the Alleghany river. This creek resembles a huge eel, wriggling and slimy, as it slides through a narrow valley about half a mile wide, with high banks rising from 70 to 100 feet on either side; it is in the flat meadows lying behind these banks on each side of the river where the oil wells are situated.

The wells in most instances are mere holes six inches in diameter, and are dug by driving cast-iron pipes, with an internal diameter of four inches, down to the sandstone stratum, the depth varying from ten to sixty feet. As soon as a good show of oil is obtained a pump is put into the well or piping, and steam power being applied, the oil and water that rises with it is pumped into immense cisterns or vats, holding not less than a hundred barrels each; here, after a few hours rest, the oil rises to the top, when the water is drawn off from below, and the crude oil run into barrels and sent to the refiners. The price of the impure oil at the well mouth is sold, according to its weight and quality, from 2d. to 4d. a gallon. When the wells are first bored the force of the gas generated with the oil frequently sends a stream of oil and water to a height of sixty feet, like the jet of an artesian well. One of the most singular facts connected with these inexhaustible oil springs is that the opening of new wells in the neighbourhood of old ones has seldom any effect on the supply of the first; or, should its quantity be diminished for a time, a day or two's rest seems again to fill the reservoir with a boundless supply. Though the demand for rock oil is daily on the increase, and few of the wells are worked up to their full power of production, the yield is enormous, though the amount that is lost, wasted, or that runs into the river, is incalculable. To obviate one of the great drawbacks in supplying the refiners with oil fast enough to meet the increasing consumption—the want of casks, whole fleets of flat-bottomed boats or floating tanks are built. Into these trough-like canoes, from forty to eighty feet long and about two feet deep, the oil is run by a hose from the tanks on the margin of the river. When a sufficient number of these boats are filled, they drop down the river with the freshets to Oil City, Pittsburg, or some other important centre, where their cargoes are discharged into the tanks of the refiner, who by distillation at a low temperature obtains an unctuous composition, extensively employed as a lubricating agent for locomotives and machinery generally, and a clear, bright, and useful oil, affording a light second only to gas in clearness and brilliancy. There is one drawback attending this bountiful supply of nature, and that is the ever-present, all-pervading *smell* that seems to impregnate the air, earth, and water of its native locality. "The whole district," says a local journal, for each oil well has its own newspaper, "is odorous with oil; the soil is made viscid with it; a piece of earth adheres to your boot, and you become offensive for days. Oil is everywhere; you taste it in the beer, detect the flavour in your bread; your bacon tastes of it; even whiskey will not extinguish the odour."

In a future article we shall give some account of the wonderful oil springs and lakes of petroleum found in China, Persia, the West Indies, and in Canada West, where the most remarkable and prolific springs, self-acting or spouting, are to be found.

ELECTROTYPING, ELECTROPLATING, AND DEPOSITION OF METALS.

This elegant art is divided into two branches, one by which facsimiles of any article may be obtained from a cast or mould, and that in any metal desired. This process is called electrotyping or electro-depositing. The other branch, or electro-plating, is that art by which any metallic substance may be temporarily or permanently coated with another metal, and one of a higher value than the original basis, depositing a surface-coating of any required thickness of copper, silver, or gold on the article submitted to the process. Two conditions, however, are necessary to effect this seemingly difficult operation, namely, that the metal required to be deposited must be in a state of solution, and acted on by galvanic agency. Though proper troughs and powerful galvanic batteries are necessary to perfect the process when carried out on a large scale, and such articles as tea-pots, salvers, forks, spoons, and rings are required to be plated with gold or silver, the process may be worked on a small scale, and most satisfactorily, with a few very simple utensils; and as a clearer idea of the various steps of the art can be conveyed to the reader by a description of the process carried on experimentally, we shall proceed to explain the various manipulations necessary to effect the results of electrotyping and electroplating.

The articles required to conduct the operation are two round oval vessels, or water-tight boxes, numbered 1 and 2, two or three yards of thin copper wire, and three metal plates, two of copper and one of zinc; the size of these plates depends upon the magnitude of the operations to be undertaken. The mode of procedure is first to bind the zinc and one of the copper plates together by means of thin twine, having *interposed* at each corner a slice of cork or a bit of wood, about half an inch thick, so as to *prevent the plates touching*, and leave a clear space between the two. A wire, long enough to reach in an arch from one vessel to the other, is to be firmly soldered from the top of the bound copper plate to the top of the second copper plate, while another wire of greater length is in the same manner to be soldered to the upper surface of the zinc plate. The medallion, coin, or whatever object is required to be electrotyped should now be soaked in very hot wax, and then brushed over with black lead until the surface is quite black and highly polished. The unattached end of the wire from the zinc plate is now to be closely bound round the margin of the medallion or object, and the end bound down by wax, care being taken to black lead and polish this additional piece of wax with the same care as that bestowed on the surface. Having prepared all the apparatus a sufficient quantity of diluted sulphuric acid is to be put into the vessel marked No. 1, while an equal amount of a solution of the sulphate of copper, or common bluestone dissolved in water, is to be poured into No. 2, adding a small quantity of diluted sulphuric acid. Into the vessel No. 1 immerse the bound plates of copper and zinc, and into the vessel No. 2 place the single plate of copper, and beside, but *on no account to touch it*, plunge the medallion or whatever the object may be, suspended, like the copper plate, by the wire attached to the zinc in vessel No. 1. After a short time a coating of copper from the decomposed solution will begin to cover the surface of the immersed object, and according to the thickness of deposit required must depend the time it is left in the solution. When eventually it is taken out of the bath, the cast may easily be separated from the mould by carefully filing all round the edge. When copper is used as the medium to be electrotyped the black-leading process is *not required;* all that is requisite being to wash or clean the coin or metal, and then polish the surface brightly.

With the same arrangements, and merely substituting a solution of the cyanide of silver, dissolved in cyanide of potassium, or a solution of the cyanide of gold, for that of the sulphate of copper, in No. 2, a coating more or less thick of silver or gold may be deposited upon the object submitted to the galvanic action of the solution. It must be borne in mind, however, that these coatings, however thick, will *not adhere.*

Where the gold or silver is expected to adhere, and articles are required to be firmly plated, the objects must first be thoroughly cleaned, then brushed over with a solution of nitrate of mercury, then washed in clear water, and not till then placed in the solution of gold or silver. The object of the nitrate of mercury is to cover the metallic article with a thin layer of mercury, which is gradually taken up as the particles of gold or silver are laid down. This coating, which is permanent, is called electroplating.

In the experiment with the solution of the sulphate of copper, a second copper plate, attached to its fellow in vessel No. 1, was immersed in No. 2 near to the medallion, so when an article is required to be silver plated, a *silver plate* must be substituted for a copper one, attached by wire in the same manner to the plate in No. 1.

By means of this process metals may be coated with a scarcely appreciable layer of either gold or silver, or they may be plated to a considerable thickness; and there can be no doubt the art of electroplating is often used for most dishonest purposes in respect to the noble metals.

GARDENING FOR JUNE.

The Flower Garden.—Having reduced the stems of pinks to one, and the buds on that stem to two or three, the forwardest must be tied round the middle to prevent it from bursting. When the first flowers are perfect, the work of propagation must be done by piping; that is, the sprigs round the bottom of the stem are taken off two inches long, the lower leaves stripped off; plant in rich earth, watered till it is like mud: hand-glasses must be covered over them, and they must be shaded from the mid-day sun. Bud roses as soon as the stocks have grown enough to offer an opportunity; their bark should readily peel off. China, and most of the smooth-barked rose cuttings may be struck under a hand-glass in the common border. Cuttings of fuchsias, geraniums, heliotropes, and all sorts of greenhouse plants, may be struck; and struck cuttings may be potted off into small pots, or planted in the open ground. Picotees and carnations, which are throwing up their bloom stems, must have them regularly tied up to their stakes; and as soon as the buds are large enough, not more than two or three should be left on each stem, nor must any plant have more than one stem left on it. Chrysanthemums as before. Dahlias must be fastened to their stakes as they progress in growth; look sharply after earwigs, which must be destroyed. Aphides, which infest roses, carnations, dahlias, and others, should be syringed off with tobacco-water, in the evening after sunset, or in the morning before the sun is upon them. This should be done with a small rose; even plain water is better than none. Watering has now become a very necessary operation for all plants in pots; and those which are out of doors should be often turned round, to prevent them rooting through. Hyacinths and tulips must be taken up carefully, and laid in their boxes, but must be dried in the shade before they are put away altogether. Decayed flowers and seed-vessels, except where the seed is wanted, should be taken off every kind of plant. Auriculas must be kept from violent rains, the drainage looked well to, and they must be shaded. Shade pansies from the hot sun, and water freely in hot weather; the sun will injure the blooms. Sow seed. Plant out seedlings, and make new beds. Strike cuttings. Take up all bulbs as the leaves decay, except where they are to stand over the winter. Ranunculuses and anemones, of the autumn planting and spring blooming, may be taken up as soon as their foliage decays. Dry them well before storing. Ranunculuses for show must be shaded and watered. Plant annuals in the borders to succeed others. Greenhouse plants, and every description of protected subjects, may be planted or placed out of doors. Biennials and perennials, that are large enough, may be planted out, but it is early yet.

Fruit Garden.—Budding. The plum tribe of plants should be done this month. Peg down strawberries, or put stones on the joints of such runners as you want for planting new beds; they strike more readily; shorten all beyond the joint. Vines must be constantly attended to; all shoots which are not required must be taken off. Wall-fruit of all kinds should be cleansed of the fly, grub, snails, slugs, and other vermin. The syringe is the most powerful antidote, if frequently applied with clean water; or if that be not sufficiently efficacious, first with tobacco-water, then clean water: all foreright shoots—that is, those which stand out from the wall—must be taken off. Thin the grapes. Standard trees are equally worth the trouble of regulating the shoots; take away those which are useless.

Kitchen Garden.—Prick out cauliflowers from the seed-bed into a piece of rich ground, three or four inches apart, to grow stronger before planting. Sow turnips for a principal crop, roll them in, and if there has been no rain for a considerable time, water the ground the day before and the day after: thin such as require it. Sow the early kinds of peas as well as others, they grow faster than the late ones; stick those that require it.

DESTRUCTION OF BOOKS.

The literary treasures of antiquity have suffered from the malice of man, as well as that of time. It is remarkable that conquerors in the moment of victory, or in the unsparing devastation of their rage, have not been satisfied with destroying *men*, but have even carried their vengeance to *books*. The Persians, from their hatred to the religion of the Phœnicians and Egyptians, destroyed their books, of which Eusebius notices a great number. A Grecian library at Gnidus was burnt by the sect of Hippocrates, because the Gnidians refused to follow the doctrines of their master. The Romans burnt the books of the Jews, the Christians, and the philosophers; the Jews those of the Christians and pagans; and the Christians the works of the pagans and Jews. The greater part of the books of Origen and other heretics were continually burnt by the orthodox party. The valuable library of Alexandria was pillaged or destroyed by the Christians, and nearly twenty years afterwards the appearance of the empty shelves excited the indignation of every spectator.

The pathetic narrative of Nicetas Choniates, of the ravages committed by the Christians in the thirteenth century at Constantinople, was fraudulently suppressed in the printed editions, though preserved by Dr. Clarke, who observes that the Turks have committed *fewer* injuries to the works of art than the barbarous Christians of that age. The reading of the Jewish Talmud had been forbidden by various edicts of the Emperor Justinian, by many of the French and Spanish kings, and by numbers of the Popes. All the copies were ordered to be burnt, and in 1569 *twelve thousand* copies were destroyed at Cremona.

The story of the Caliph Omar—proclaiming throughout the kingdom, at the taking of Alexandria, that the Koran contained everything that was useful to believe or to know; and therefore commanded that all the books in the Alexandrian library should be distributed to the masters of the baths, amounting to 4,000, to be used in heating their stoves during a period of *six months*—modern paradox would attempt to deny.

A similar event happened in Persia, when Abdoolah in the third century ordered all the Persian MSS. found within the circle of his government, as the works of idolaters, to be burnt. When Budah was taken by the Turks, a cardinal offered a vast sum to redeem the great library, founded by Matthew Corvini, being particularly rich in Greek and Hebrew lore, and all the classics of antiquity. Thirty amanuenses had been employed copying manuscripts, and illuminating them in the finest style of art; the barbarians, however, destroyed most of the books, in tearing off their splendid covers and silver bosses. Cardinal Ximenes seems to have retaliated a little on the Saracens, for at the taking of Granada he condemned to the flames *five thousand* copies of the Koran.

The destruction of libraries in the time of Henry the Eighth, at the dissolution of the monasteries, is wept over by John Bale. Those who purchased the religious houses took the libraries as part of the booty, with which they either scoured their furniture, or sold the books as waste paper, or sent them abroad in shiploads to foreign booksellers. The fear of destruction induced many to hide their most valuable manuscripts underground, or in old walls, where they either rotted, became forgotten, or lost.

At the Reformation, popular rage exhausted itself on illuminated books or MSS. that had red letters on the title-page. Any work that was decorated was thrown in the flames as a superstitious one; red letters and illuminations were considered as sure marks of their papistical and diabolical origin. In 1599 the hall of the Stationers underwent as great a purgation as that carried on in Don Quixote's library. Wharton gives a list of the best writers who were ordered for immediate conflagration by the prelates Whitgift and Bancroft, urged on by puritanical and Calvinistic prejudice. Like thieves and outlaws, the books they condemned were *ordered to be taken wheresoever they may be found.*—"*Curiosities of Literature.*"

MEMORY — MODES OF STUDY. — We are not prepared to recommend the use of any system of artificial memory. Most of those we have examined require more trouble to understand than would enable the student to gain the knowledge he seeks without them; and they too often make those who use them mere mechanical repeaters of facts, without enlarging their judgments or adding to their stock of real knowledge. To learn a list of dates is of little use, unless the student understands the causes and results of the events whose place he fixes in his chronology. An enlarged view of periods of history, and a knowledge of the manner in which the events of past ages influence the present conditions of mankind, is more to be valued than the most perfect memory of dates. It is a common error of students in science, to seek perfection in details before mastering general principles, and to overburden the mind with a series of comparatively unimportant matters, while they neglect to gain acquaintance with the fundamental laws. This is as absurd as the conduct of a man, who, wishing to gain a complete knowledge of a fine piece of architecture, began by analysing the cement used in its construction.

PRONUNCIATION — INDISTINCTNESS. — One great cause of indistinctness in reading, is sinking the sound of some of the final consonants when they are followed by words beginning with vowels, and, in some cases, where the following word begins with a consonant. A common fault in reading and speaking, is to pronounce the word *and* like the article *an*. Example:— "dog *an* cat," instead of "dog *and* cat." "Men *an* money," instead of "men *and* money." This fault is most offensive to the educated ear, if it is committed when the following word commences with a vowel of the same sound, as in the sentence, "question *an* answer," instead of "question *and* answer;" or, "he ate pears *an* apples, *an* an egg," instead of "he ate pears *and* apples, *and* an egg." In some parts of the kingdom the final *f* is dropped, especially before words beginning with *th*. The word *with* before *th* is also frequently slurred in a manner which gives much indistinctness to utterance. In reading or speaking in large rooms, distinctness is secured only by the slow utterance of words, between each of which there should be a perceptible interval.

WRITING MATERIALS. — Before the invention of writing as a means of recording events, men planted trees or erected rude altars or heaps of stone, in remembrance of past events. Pictures and statues were soon suggested as symbolical or representative things. Hercules probably could not write when he fixed his famous pillars. The most ancient mode of writing was on bricks, tiles, oyster-shells; then tables of stone or facets of blocks; afterwards, on plates of ivory; and finally, an approximation to the use of paper was made by the use of the bark and leaves of trees. It has been gracefully observed, that the ancients gave speech to rocks, metals, and trees by engraving memorable events upon them. In the book of Job, mention is made of engraving on rocks and sheets of lead. The law of the Jews was said to be written on tables of stone;—Hesiod's works on leaden tables. The laws of the Cretans were described as "engraven in bronze." The Romans etched their laws on brass, and the speech of Claudius, engraved on plates of bronze, is said to exist in the town-hall of Lyons. Bronze tables are still unearthed in Tuscany. Treaties and conveyances of property were also engraven on brass, and official mementos have been found etched on copper. A bill of feoffment on copper, dated a century before Christ, is stated to have been dug up near Bengal. In early times the shepherds wrote their songs with thorns and awls on straps of leather, which they wound round their crooks. The Icelanders scratched their *runes* on their walls, and their heroes appear to have bestowed some of their leisure in recording their own acts on their chairs and bedsteads. Wooden boards overlaid with bees-wax were *sometimes* in use. The Mahomedans scratched their chronicles on the blade-bones of sheep.

WAX. — Vegetable wax and bees-wax differ in their elementary composition. The former is a vegetable product, forming the varnish of the leaves of certain plants and trees; it is found also upon some berries—as the *Myrica cerifera*, and it is an ingredient of the pollen of flowers. It was long supposed that bees merely collected the wax ready formed in plants, but Huber found that, though excluded from all food except sugar, they still formed wax. "Bees-wax" is obtained by draining and washing the honeycomb, which is then melted in boiling water, strained through calico or linen, and cast into cakes. Many of the cakes sold in the shops will be found to be moulded into the shape of the inside of the cottage dishes in which the melted wax was cooled. Foreign wax comes from the Baltic, the Levant, and the shores of Barbary. It is bleached by exposure in thin slices to air, light, and moisture, or more rapidly by exposure to action of chlorine. White-wax is generally adulterated with spermaceti. It is also mixed for artistic purposes with Canada balsam, Venice turpentine, common resin, tallow, &c., &c.

DEAF AND DUMB. — Deafness may be partial or complete. Where it is partial, it usually arises from disease; such as inflammation or destruction of the internal parts of the ear, or disease of the throat, where the eustachian tube opens at the back of the nose. Where the deafness is complete, it commonly arises from incompleteness of the organs of hearing from birth, and in such cases *dumbness is always the result.* The reason of this is obvious. The man who never hears the sound which others use to communicate their thoughts, can never imitate those sounds. It has been found, indeed, in those rare cases where complete deafness has arisen *after* children have learned to talk, that they have retained, only for a while, the memory of the modes of speech; but that their words become fewer, till at last they have forgotten altogether *how* to utter words or articulate vocal sounds. In complete deafness, the sufferers do not hear the sounds which they themselves utter. The effort to teach the dumb to talk has been undertaken by ignorant persons, who, having found all the organs of the voice complete, supposed that in that circumstance they found all the conditions necessary for the production of speech, being ignorant of the fact, that speech is an imitation of sounds *heard*, and that the integrity of the organ of hearing was the first requirement.

ELECTRICITY OF THE AIR. —The earth and the surrounding air have an extraordinary relation to electricity. These phenomena may be referred to *static* or *dynamic* electricity; the latter occurs but rarely, as in case of thunderstorms, &c., which are instances of great local disturbance, as there must be a great amount of this abnormal action to produce a sensible effect on the galvanometer. It is very remarkable that these disturbances occur when the amount of atmospheric electricity is at its minimum. The *static* condition of atmospheric electricity is a subject of much higher philosophical interest. From the observations of M. Quetelet, it appears—First, that the amount of electricity at any given moment varies at different altitudes, but is the same at all similar altitudes. Secondly, that it increases directly with the distance from the earth's surface. Thirdly, that it is greatest in the coldest months. Fourthly, that in the course of the day it is greatest at 8 A.M. and 9 P.M. Fifthly, that it is greater when the sky is clear than when it is clouded. Sixthly, that the electricity of fog or snow is double that of rain, and equal to the mean maximum of the cold months. During his observations, continued through five years, M. Quetelet found the atmosphere in a negative state in twenty-five instances only, and all these occurred either immediately before or immediately after rain, or a storm. As to the dependence of electricity on the direction of the wind it appeared to be greatest when the wind was from S.E. to E.S.E., and from W.N.W. to N.W.

COLLEGE EXPENSES. — *Oxford.*—Several correspondents ask—"Which college is the least expensive for persons wishing to study and graduate at?" This is a question which has been asked, no one knows how often, during the last 120 years, and still continues to be of great interest. Mr. Eden, a fellow and ex-tutor of Oriel College, published a work on *College Expenses and Poor Scholars;* and the Rev. O. Gordon, *Considerations.* It has been stated, upon high authority, that a young man might have rooms, food, and college tutor for £80 a-year (of twenty-two weeks). As observed in an excellent article on this subject in the *Oxford Protestant Magazine* for October 1847—Oxford expenses are of two or three classes: there are the voluntary, the involuntary, and an ugly class, which may be called the unreckoned, or the unconscious, or the miscellaneous. For the first only are the college authorities *directly* responsible. The expenses of a quiet reading man, as incurred during his first year of residence, are given as follows:—*Preliminary Expenses:* Caution money, £30; admission fees, £5; matriculation, £1 18s. 6d.; furniture, £40; making a total of £76 18s. 6d. For Lent term (eight weeks), he paid for food (battels), university dues, tuition, rent, coals, and laundress, £21 17s.; for Easter term (six weeks), in the same manner was expended £19 11s.; for Act term (three weeks), £14 2s.; and for Michaelmas term (five weeks), £23 2s.; making the *current* expenses for the one year equal to £78 12s., or for the three years, £235 16s. Add to this the preliminary expenses, and we find that upon the three years there has been an *outlay*—which may be called compulsory—equal to £312 14s. 6d., or an average of £104 4s. 10d. per annum. In addition, however, the four grace terms of non-residence are charged for, of which the expenses are equal to about £21 8s. To this must be added the fees for B.A. (£12 6s.) and M.A. (£22 12s.) degrees; making a gross total of £369 0s. 6d. From this is to be deducted caution money, and thirds for furniture, returned £54; leaving a nett total of £315 0s. 6d., or £105 per annum. To this must be added the expenses of tea, sugar, and candles (which the college does not provide), the fees of a private tutor, and the expenses of books, and what are called extras, which may be regarded as closely allied to necessaries. The poor student, therefore, pays for one hundred weeks' residence in Oxford upwards of £400. [See the Report of the Bristol Education Society.] The least expensive *college* for a man of thirty years of age is Pembroke or Exeter. The expenses are said to be a little less at what are called "Halls." In reply to questions about "terms to be kept," we should refer our pupils to the *University Calendar* (6s.) for more detailed particulars than we can here give. There are four terms in the year, the lengths of which respectively had been given above. Sixteen terms (*nominal*) are required for the degree of B.A. from commoners; and they are allowed to be candidates for the degree after having completed three years; but owing to certain regulations, residence for twelve terms only is *actually* necessary. From the admission to B.A., twelve *nominal* terms are computed before the admission to M.A., but only *one* term is *actually* required. For B.C.L. (bachelor in civil laws), twenty-eight *nominal* terms are necessary, but seventeen only need be *actually* kept. The regulations of matriculation are private with your college tutor. In answer to A. R., and others, we reply that a B.A. of Dublin may get his terms allowed, but must pass an examination before obtaining a decree. The difference between the "incorporation" and "ad eundem gradum," is, that the latter only gives a vote in convocation. W. B. F., &c.—The terms at St. Bees' do *not* count at Oxford.—*Cambridge.*—The college expenses at Cambridge, which appear to be very disproportionate compared with those of the Scotch universities, amount to about £80 per annum, exclusive of tradesmen's bills and private tutorage. For this sum, the student is entitled to the exclusive use of two rooms in college, to dine in the college hall during term, and to attend the various classes. These meet mostly for two or three hours each day. The subjects of study for the first year are —the classical authors, elementary mathematics, and Old Testament history; second year, the same, with the addition of the evidences of the Christian religion, moral philosophy, and Greek and Roman history; third year, the higher mathematics, theology (patristic and polemical), the history and antiquities of the Christian Church, and the Liturgy of the English Church. The whole of the three years' studies, if diligently pursued, are believed to be calculated to ground the student well in the three important divisions of learning — history, philosophy, and science; and to strengthen (as Dr. Whewell has shown in his *Cambridge Studies*) the two most important of the human faculties—reason and language. I ought to mention that at Trinity College there is an entrance examination in Homer's *Iliad*, Xenophon's *Memorabilia*, Virgil's *Æneid;* arithmetic; the elements of algebra; and Euclid, books i. and ii. P.S.—The student has an opportunity of attending lectures, if he please, for a trifling fee, in every branch of learning—botany, chemistry, geology, medicine, anatomy, physic, and in all the modern languages, in addition to the regular course of study.—J. A. L. —*Edinburgh.*— An Edinburgh correspondent writes:—" In Edinburgh, the session begins on the first Tuesday of November, and closes about the middle of April. The matriculation ticket costs £1. The literary, philosophical, and divinity classes, are three guineas each. The medical classes vary from £2 to £7. Taking £8 as class fees, one's total expenses for a session need not exceed £25."—A Glasgow student states that the fees there only differ in the matriculation fee, which is 7s. 6d. The students are under no restrictions except in the class rooms; they can live where they think proper, and do what they please.

TRIFLES.—The best essay we know on the importance of small matters is to be found in Tupper's *Proverbial Philosophy.* We remember hearing how a French poet had inscribed a copy of verses—*A Guillemette, chienne de ma Sœur.* In a second edition, it is said, the word *ma* having dropped out, the letters were placed by mistake in such a manner, as to make the sentence read —*ma chienne de Sœur.* In 1717 a Bible was printed at the Clarendon Press, in which the heading of the 20th chapter of Luke stood thus—"The parable of the Vinegar." By mistake a *g* had been substituted for a *y* and the *d* dropped out. A quarrel about an old bucket has ere now lead to a destructive war; a trifling accident has destroyed a city. The most important interests frequently depend upon a steady and uniform attention to small matters. We have no faith in men who are so impressed with their own conceptions of the immensity of their "mission," that they spend their energies in pride-blown vapourings, and are too self-satisfied to condescend to pay attention to "details." They can live for nothing less than "the universe," and therefore forget their duty to the "limited circle" of fellow creatures in the "narrow sphere of reality." It is easier to talk of the "devotion of a life to the elevation of our fellow-man," than to give a week's steady attention to collecting for the support of a Sunday school.

HOMŒOPATHY.—The practice of dividing medicines infinitesimally is *not* an essential principle of homœopathic practice, which is founded upon the principle that *similia similibus curantur.* The method consists essentially in the administration of medicines, which are presumed to excite in healthy persons symptoms similar to those of the disease. Thus, eruptions of the skin being produced by sulphur, sulphur is applied as a cure; quinine producing intermittent febrile symptoms is used as a specific for ague; and arsenic, in minute doses, being found to give rise to symptoms analogous to those of cholera, is indicated as the specific for that frightful disease. Though disciples of the Allopathic school, we cannot deny that singular success has attended homœopathic practice on several occasions; as, for instance, in the treatment of the cholera in England and Russia; and still more singularly in the treatment of the destructive typhus, which contributed to the depopulation of Ireland. As with phrenology and other sciences, the professors of homœopathy have been too often its greatest enemies, by claiming for its practice, &c., higher value than really belongs to it. A large proportion of those who practise homœopathy adopt the plan of administering medicine in a state of minute subdivision on the ground that medicines so presented to the absorbing surfaces of the body more rapidly pass into the blood; but we have never heard any person argue that "the smaller the dose the greater the effect." Mr. Sampson's work is the best popular treatise on the subject, we believe.

VEGETABLE ACIDS IN RELATION TO CHOLERA. — Some of your readers will, doubtless, recollect having read in the *Lancet* for 1854 and 1855, allusions made to the exemption of Jews from cholera, and the causes assigned for their immunity—by some to olive oil, others to abstinence from pork and shell-fish, also from spirituous liquors, and by myself to the free use of lemon-juice and vinegar with articles of diet. The exemption of Jews from cholera more than any other race has been doubted by some. That many have died of the disease, I cannot but admit; but I suspect that some of those who were attacked were afraid of continuing, in times of cholera, the vegetable acid diet. Amongst the few of the Jewish persuasion whom I may call patients, I found more than one family who thought that acids of all kinds should be avoided, and some of these had diarrhœa. Michel Levy, in his "Traité d'Hygiène," alludes to the exemption of Jews from cholera, and Iskand de Diembrack, M.D., in his work on the Plague, published by him in Latin, in 1722, and translated into English by Thomas Stanton, surgeon, states this, in reference to plague :—"It is very remarkable that in the histories of many pestilences, notice is frequently taken of the exemption of Jews from infection." Both authors dwell upon the diet of Jews, but rather allude to the vegetable acids, which, from times immemorial, the Jews have been in the habit of using more or less. I would willingly enlarge upon this subject, but fear to trespass too much at present on the pages of your journal, well knowing that many of your correspondents, who have a prior claim to me are awaiting their turn for their articles to appear. In conclusion, I will express a hope that, should the cholera unfortunately visit us this or any succeeding summer, a fair trial will be given to some of the vegetable and mineral acids, both as *preventive* and remedial. I am, Sir, your obedient servant, J. H. TUCKER: Berners-street.

SLEEP AND STUDY.—It is a common complaint — "When I want to study, I invariably fall asleep." There are many reasons why this is the case. A frequent cause of the sleepiness of the student over his book is the choice of an improper hour for reading, as for instance—after dinner, or at a late hour in the evening, after the physical energies of the bodies are exhausted. Smoking, and the drinking of spirituous liquors, also produce sleepiness. A still more common cause of drowsiness is the direction of the mind constantly to the same subject *in the same manner*; this is the mistake of diligent students, who forget that the mind, like the stomach, requires a mixed diet, and loses its appetite and power of digestion, unless the nutriment is varied, *at least in form.* The effort to study continuously, when the brain declares itself unfitted to receive more excitation in that particular manner, is decidedly injurious, and should not be persisted in. If it is necessary to pursue the *subject*, the *manner* of study should be varied. A friend may be requested to question the student, or he may "test his knowledge" by contriving questions, and looking out the answers in his works of reference, which should be read aloud. We know a man of very moderate abilities, but who has achieved a high position, and who attributes much of his success to a habit of extempore *speaking* in his room to an imaginary audience, when reading had become wearisome. The student often induces drowsiness by foolishly making his study, his table, his chair, and his habits, as luxurious as possible. We *never* sit in an easy chair, and we would advise every ambitious student invariably to eschew all such luxuries as lounging-chairs, thick table-cloths, elbow cushions, handsome reading-caps, and all varieties of book-rests. We know a *real* "study" at a glance, by the absence of all such things. The want of a proper supply of oxygen in the blood sent to the brain, is another fruitful cause of sleepiness in the student who shuts himself up in an ill-ventilated room, or sits down to study immediately after coming from the cold *condensed* air, which, at each inspiration, supplies him with more oxygen than the warm *expanded* atmosphere of a heated room. Too large or too small a supply of blood to the brain produces drowsiness; the former is the more frequent cause, but may be relieved by tying a damp towel round the head. A common mistake of the studious is to over-heat their rooms, and to sit near the fire, whereby their heads become heated, and the blood driven from the feet, which are chilled by the cold (and comparatively heavy) air which flows along the floor. A thermometer should be suspended in every study. Excellent instruments may be purchased for one shilling at Bennett's, 65, Cheapside. A regulated temperature is an important item in the causes of the health and success of the studious.

THE BLACKBERRY.—Very few regard this shrub as of the slightest value—it does, however, possess some qualities which entitle them to the attention of others than the mere passer-by. For instance:—the blackberries have a desiccative and astringent virtue, and are a most appropriate remedy for the gums and inflammation of the tonsils. Boerhave affirms that the roots taken out of the earth in February or March, and boiled in honey, are an excellent remedy against dropsy. Syrup of blackberries, picked when only red, is cooling and astringent, in common purgings, or fluxes. The bruised leaves, stalks, and unripe fruit, applied outwardly, are said to cure ring-worm. Passing through the cultivated grounds of the Messrs. Needhams, in West Danvers, our attention was attracted to some luxuriant bushes, about four feet in height which we were told yielded a berry—called the *white blackberry.* To-day we have been kindly favoured by the gentlemanly proprietors with a box of this fruit matured. It is not exactly white, but more *white* than *black*, resembling in appearance and taste the fruit of the mulberry quite as much as the blackberry. The luxuriant growth and abundant produce of this shrub make it desirable to be cultivated by those who are ambitious of supplying a variety of the best fruits of the season.—*New England Farmer.*

CHINESE ETIQUETTE.—When a Chinese emperor dies, the intelligence is announced by despatches to the several provinces, written with blue ink, the mourning colour. All persons of rank are required to take the red silk ornaments from their caps, with the ball or button of rank; all subjects of China, without exception, are called upon to forbear from shaving their heads for one hundred days, within which period none may marry, play on musical instruments, or perform any sacrifice.

CLOVES.—Cloves are the unopened flowers of a small evergreen tree that resembles in appearance the laurel or the bay. It is a native of the Molucca, or Spice Islands, but has been carried to all the warmer parts of the world, and is largely cultivated in the tropical regions of America. The flowers are small in size, and grow in large numbers in clusters at the very ends of the branches. The cloves we use are the flowers gathered before they have opened, and whilst they are still green. After being gathered they are smoked by a wood fire, and then dried in the sun. Each clove consists of two parts, a round head, which is the four petals or leaves of the flowers rolled up, enclosing a number of small stalks or filaments. The other part of the clove is terminated with four points, and is, in fact, the flower-cup, and the unripe seed-vessel. All these parts may be distinctly shown if a few leaves are soaked for a short time in hot water, when the leaves of the flowers soften, and readily unroll. The smell of cloves is very strong and aromatic, but not unpleasant. Their taste is pungent, acrid, and lasting. Both the taste and smell depend on the quantity of oil they contain. Sometimes the oil is separated from the cloves before they are sold, and the odour and taste in consequence is much weakened by this proceeding.

WATER.—Well water may be affected as to purity, taste, &c., by the presence of mineral salts, or of animal matters. The mineral substances are silica, alumina, carbonates, and phosphates of lime and magnesia, sulphate of alumina and potass, chlorides of calcium, magnesium, sodium, and nitrates of the same bases. These mineral salts, in small proportions, do not seriously affect the qualities of water used for domestic purposes; when, however, they are in large proportions or combined with animal matters, the water is not fit for either washing or drinking. The presence of animal matters is, therefore, of the very highest importance, since their effects on the human economy produce dysentery, and various maladies which appear to be contagious, because the whole population acquire the poison at the same source, and are affected at the same time. Hence burial-grounds of all kinds should be at such a distance from the town as to prevent the injury of the wells by the filtration of the rain through the soil of such places. We have observed in more than one instance, that where the burial-grounds of a town are much above the level of its streets, or are placed in its centre, that the mortality is above the average. The presence of magnesia, in considerable quantities, in well-water, has been said to produce *goitre* and cretinism; but there is some doubt as to the truth of this statement. The disagreeable taste of the water sent to us appears to be derived from alumina dissolved in an excess of carbonic acid. It contains also a large quantity of vegetable matter, derived, apparently, from filtration through peat, or by passage over moor land. The soil generally exercises a great purifying power, by the oxidation of organic matters. [See Dr. Smith's Report, published in *Jameson's Journal*, No. 98.] There are many natural water-purifiers. In the *Quarterly Review* it is related that Mr. Warrington had, for a year, kept twelve gallons of water in a state of admirably balanced purity by the action of two gold fish, six water-snails, and two or three specimens of that elegant aquatic plant known as *Vallisneria spiralis*. Before the water-snails were introduced, the decayed leaves of the Vallisneria caused a growth of slimy mucus, which made the water turbid, and threatened to destroy both plants and fish. But, under the improved arrangement, the slime, as fast as it was engendered, was consumed by the water-snails, which reproduced it in the shape of young snails, whose tender bodies again formed succulent food for the fish; while the Vallisneria plants absorbed the carbonic acid exhaled by the respiration of their companions, fixing the carbon in their growing stems, and luxuriant blossoms, and supplying fresh oxygen for the respiration of the snails and the fish. The spectacle of perfect equilibrium thus simply maintained between animal and vegetable, must have been very beautiful; yet the experiment is so simple, that any of our pupils may repeat it with a certainty of success. It is possible that some such means may hereafter be made available on a large scale, for keeping *tank-water* clean and sweet.

WHEN we are alone, we have our thoughts to watch; in our families, our tempers; and in society, our tongues.

PERSEVERING mediocrity is much more respectable, and unspeakably more useful, than talented inconstancy.—*Life in Earnest.*

DIET, AND THE DIGESTIBILITY OF FOOD.

(*From the Medical and Surgical Guide.*)

(*Concluded from page 157.*)

Puddings.—Pastry ought to be light, well cooked, but not what is called rich or greasy. Hard dumplings lie like a stone on the stomach of most people. Beef steak puddings and meat pies ought never to be taken by those having weak digestion.

Little fancy cakes eat much shorter if put while hot into a hot jar instead of being allowed to cool according to the usual custom.

Cakes, puddings, &c., are much better if the currants, sugar, and flour used are made hot before being mixed together.

Oatmeal.—Oats are best when grown in a cold climate, and they seem to agree with the inhabitants as a substantial article of diet. Oatmeal is chiefly valuable in the form of gruel, as it soothes the stomach, is nutritive, and easy of digestion. A little oatmeal mixed with water is an excellent drink when abstemiousness is necessary. As a light supper, nothing is more fitting than gruel for the delicate. In inflammatory affections, when proper to change from toast and water, nearly half a cupful of gruel may be given every two or three hours. But there are some persons with whom oatmeal never agrees. Gruel for the sick ought always to be boiled one hour. When it will sit comfortably on the stomach of a child, oatmeal gradually stirred into boiling water, and eaten with milk, forms an excellent breakfast, not so liable to produce costiveness as bread and milk.

Barley.—Bread made of the meal of barley is not easily digested, but, from its flavour, is liked by those accustomed to it. Pearl barley is a great addition in the concoction of broth; and as barley-water will often suit where oatmeal gruel disagrees, mixed with milk it is an excellent diet for the sick. It should always be made fresh, and boiled three hours.

Rye Bread acts as a laxative; but the disease to which this grain is subject will sometimes render the whole population where it is used dangerously ill, and be productive of most afflicting diseases.

Rice, from its large proportion of starch, is most excellent for the sick and those of defective digestion; it forms an excellent substitute for vegetables when found productive of flatulency; its tastelessness renders it easily flavoured and palatable. It ought to be well cooked, the grain much swelled, but not broken; by not stirring it in the process of boiling it does not, what the cooks call, "set on." Ground rice is more readily cooked than when whole. It is a good and economical food for families.

Maize requires a taste to be acquired for it, and then it is preferred to wheaten bread. Mixed with wheaten flour, or as puddings or porridge, it is, as regards digestion, about the same as ordinary flour.

Pea Meal is very nutritious, but often indigestible; from the flavour it gives to soup, it is highly relished, and especially used for that purpose on board ship; it is also said to act most beneficially with sailors as a preventive to scurvy. In the north it is often made into bread, although the bread made from it is heavy and not easily digested.

Asparagus is prescribed in Spain as a powerful diuretic. The less fibrous vegetables are, the more easily they are digested, yet they contain but a very slight proportion of nutritious principle; in this class there may be named artichoke, sea-kale, vegetable marrow, celery, the flower of the cauliflower, and young French or kidney beans. Vegetables ought to be thoroughly cooked, and the water in which they have been boiled well drained from them before use. French and kidney beans, when old, contain a great deal of nourishment, and are a good substitute for more flatulent vegetables. Sea-kale and asparagus were at one time insignificant marine plants. The wild briar is the parent of the rose; the sloe, of plums, peaches, apricots, and nectarines; the crab, of apples of all kinds; and corn, the improvement of grass.

Potatoes.—The best potatoes do not contain a fourth of the nutritive matter of wheaten flour. They are chiefly valuable to dilute food that contains a large proportion of albuminous matter. If man were to feed exclusively on animal food, a vast train of evils would arise; and therefore, by partaking of it moderately, while he supplies the stomach with a sufficiency for the exercise of its functions, by some such article of diet as potatoes he keeps up a proper balance, tending to a healthy state of body. Potatoes ought always to be fully ripe and well cooked, and not eaten with a "hard heart." The manner of cookery, as to boiled, roasted, or baked, is of no importance. It is said, if boiled with their "jackets" on they are more nourishing, but, if peeled before boiling, more easily digested.

Spinach, when tender and fresh, is easily digested. It acts as a stimulant to the stomach and bowels, and is gently laxative in many instances.

Turnips ought to be young, otherwise they are apt to be slow of digestion, and annoy the digestive powers.

Cabbages and Greens, if young and quite fresh, are wholesome, but if even a day old they frequently ferment and produce wind and acidity during digestion, which occupies some time. The less fibrous they are the better.

Carrots and Parsnips are nutritious, but rather difficult of digestion with some persons.

Green Peas are best when young. When old they are highly nutritious, but do not agree with those who have bad digestion.

Broad and Windsor Beans ought only to be eaten by those who have out-door exercise.

Dried Peas or Beans are very nutritive, but slow of digestion.

Watercress or Garden Mustard stimulates the stomach and promotes appetite.

Lettuce, if found easy of digestion, with a little salt, is suitable to the stomach, and may be eaten, as in the north, with sugar and vinegar, or, as dressed on the continent, with vinegar, mustard, and oil. It is best when young and quickly grown, as its narcotic principle is not so great as when old, and its fibres being tender, digestion is more easy.

Celery ought to be eaten when young and tender, and is more easily digested when boiled.

Radishes are only good when young and scraped.

Leeks and Onions do not agree with weak stomachs; they are valuable in cold and humid atmospheres, and where the diet is meagre, as on the Continent, and among labourers whose wages do not afford a nourishing diet. They are conducive to health. A little parsley takes off the disagreeable odour of the breath arising from their being eaten.

Cucumbers.—Persons having a bad digestion ought never to eat this watery and cooling vegetable. Vinegar and salt and pepper are condiments that should always be used with it.

The French convert vegetables of all kinds into wholesome and somewhat nutritious soups, which, by the addition of a little spice and flavouring, have become favourite dishes with all classes.

Sugar is highly nutritious, adding to the fatty tissue of the body, but is not easy of digestion.

Honey seldom disagrees with the stomach; it ought not to be quite freed from the wax of the comb, when used as an article of diet; it is greatly laxative.

Treacle, though like most highly saccharine bodies, irritating to the digestive system, is preferable to sugar, and at the same time has laxative properties.

Olive Oil, like butter, is slow of digestion; from continental nations eating less frequently than we do, and consequently there being many hours for the digestion of food, it may be found useful in giving employment to the stomach.

Vinegar is apt to derange the functions of digestion; yet, where the food is of an oily nature, or not fresh, it aids digestion, and prevents bad effects; this is especially the case on a voyage where salt meat is often eaten.

Salt is imperatively required with

our food, but ought to be taken with due regard to moderation.

Spices are stimulants to digestion; but if used to excess, tend to weaken and impair the action of the stomach.

Pickles are often valuable as stimulants and preventives of putrefaction; but when indulged in as mere provocatives to the appetite, too often cause the passage of the food before digestion has been completed.

Tea exercises a peculiar influence over the nervous system, hence tea is employed as a drink by those who wish to remain watching or studying at night. Strong green tea, taken in large quantities, acts upon some as a narcotic, but weak tea rarely disagrees with the invalid, and is admissible and refreshing in a variety of diseases, especially those of a feverish or inflammatory tendency.

A grain or two of carbonate of soda put into the tea-pot with the tea, will greatly aid in extracting its strength and flavour. The water must boil before it is poured on to the tea, and only a small quantity should be poured on at first.

Coffee is a tonic and stimulating beverage of a wholesome character, but not so good for the invalid as tea; this is used as an anti-narcotic by those who study at night, and is given largely to patients after poisoning by opium and other powerful narcotics.

Chocolate is very nourishing, but, on account of the oil which enters into its composition, it is difficult of digestion, and apt to disagree with delicate persons.

Cocoa is less oily, and being a mild astringent, is adapted to persons with relaxed bowels.

Fermented Liquors, such as ale, porter, and beer, commonly known as fermented decoctions of malt and hops, deserve a slight notice. Beer differs from wine in containing less spirit, and more nutritive matter; therefore, when used in moderation, it may be considered wholesome, proving a refreshing drink, and an agreeable and valuable stimulus and support to those who have to undergo much bodily fatigue.

Wine.—It cannot be denied that more perfect health is maintained without than with the use of this liquid; nevertheless, a moderate enjoyment of wine is not injurious to those who take much open-air exercise.

Ardent Spirits.—The injurious effects of spirits we beg most emphatically to impress upon the reader, as in warm climates, and in most countries visited by a voyager or emigrant, he meets only with newly-manufactured spirits, which prove most baneful to the English constitution, producing a long train of diseases. The most immediate consequences are felt in the bowels, dysentery being prevalent, and often fatal to those who give way to the degrading bestiality of over-indulgence in Australia. The incautious use of ardent spirits may produce evil consequences to others, not habitual drunkards. Of the havoc created by the new rum of the United States, all have read, and lamented over the weakness and depravity of human nature. Insanity is another disease that those who indulge in spirituous liquors are liable to. Dram-drinkers suffer from liver complaint, loss of appetite, and fatal disease of the stomach; they become thin, wasted, and emaciated. Emigrants, by indulging in ardent spirits, bring upon themselves ruin in body, mind, and fortune. Dr. Prout says that, "with regard to the use of *stimulating* fluids during meals, it may be laid down as a rule, that the stomach, requiring their aid to enable it to do its duty, is in a state of disease, or certainly not a *natural* state; for the moment such fluids enter a stomach only slightly debilitated, they act as ferments, and are not only converted into acids themselves, but dispose everything else to undergo similar changes," thus accounting for diarrhœa, dysentery, &c. The same eminent physician observes, with regard to the use of tobacco, that he considers it most deleterious in its effects upon the organs of digestion and nourishment.

A DIVINE potency presides in human affairs, and is wont often to shut great things within small.—*Raphael's Tomb.*

JOURNEY OF DISCOVERY ALL ROUND OUR HOUSE.

JOURNEY FOURTH.

THE TRAVELLERS RESUME THEIR JOURNEY, AFTER A LONG STOPPAGE, WHICH HAS ENABLED THEM TO CONSIDER AND IMPROVE THEIR PLANS.

WE are now about to resume our Journey of Discovery all Round our House, and with the full determination to go right on, and to complete the book of our travels, without any further delay.

We have already considered the physical and physiological constitution of the inhabitants of our house, and we shall now have to forage about in every direction to see what we can find, and to ascertain what facts relate to the history of every object which meets our view.

And a very curious journey this will be. For we shall not confine ourselves to the examination of the mahogany table, the alabastar ornament, the *papier maché* and pearl tray, and the cut lustres which glisten upon the mantle-piece. We must go into the kitchen, get into the salt box, explore the cruet-stand, call in at the coal hole, forage about the fire-place, and even make an excursion up the chimney. For in every place some interesting facts may be gleaned, and the gems of knowledge that will be dug out of some of these dark recesses will be found even more gratifying to the mind than the facts associated with objects that are at first more pleasing to the senses.

In order that we may be able to get through such an extent of travel, and to record our discoveries in a plain but concise manner, we intend, in future pages, to adopt the catechetical mode of exposition, and put plain questions and answers respecting all the objects that come under our notice.

But before we proceed to do this, let us call attention to a remarkable circumstance bearing upon a fact stated at the outset of our journey.

It was there narrated that a party of young people, and their mamma, with the amiable Dr. Renford, went to see the performances of the Wizard in Covent Garden Theatre. It is now very well known that the theatre was some time afterwards burnt down. The Wizard gave a masquerade, and in the very midst of the wild folly of the scene, a fire broke out — and now Covent Garden Theatre is—Where?

If you had gone over the site of the late theatre at the time (1856), little would be seen but charred pieces of wood and blackened heaps of stone, in wild confusion encumbering the ground. But of this once splended edifice, with its magnificent proscenium, its vast-pit, and wide range of successive tiers of boxes, nothing else remains. What has become of all the former "effects?"

Why the theatre has taken wings, and flown away. Speaking generally, fire seized upon the splendid fabric, and in a short time its elements were dissolved and set free to form fresh combinations in the great theatre of nature. These elements being disengaged formed, in the manner we will hereafter explain, when exploring our fire-place, carbonic acid gas and water.

Where has the carbonic acid gas gone?

It has been taken upon the wings of the wind, and, in all probability, been borne to every quarter of the globe. In the dense forests of Central America the monster tree has put forth its leaves and fed upon the gas held in the air—the tree has, in fact, made a meal upon Covent Garden Theatre, and possibly that piece of forest scenery which served to raise a pleasing illusion before the eyes of the audience in Macbeth, or the Tempest, is now a piece of real foliage waving its broad leaves in the western breeze. And who knows but that, in the course of nature, we have drunk in our tea-cups some of the very water produced by the combustion of this great temple of the muses? While, probably, in millions of instances, drops of that water lie in crevices and hollows of the earth, forming new worlds that have already become inhabited by the wonderful tribes of animalcules who make their exits and their entrances on their little stage, and live and die, within the globule of a drop of water no larger than a tear.

Now, as we have described the physical constitution of the inhabitants of Our House, let us first examine the *elements* in which those inhabitants live, then we will inspect the inventions which man's ingenuity has adopted to render those elements more subservient to him, and will also examine to some extent those works of ingenuity and art by which man surrounds himself with luxuries that minister to his happiness, though they cannot be said to be essential to his existence.

We have described man's organisation. What is that organisation for? *It is to make use of the elements upon which man exists.* The lungs make use of the air; the eye makes use of the light; the stomach and the system generally make use of water; every part of the body uses heat; and all parts of the system demand food. The hand feeds as constantly as the mouth. The mouth is the receptacle of food by which the body is to be fed. The stomach is the kitchen in which food is prepared for the use of the body. When we speak, therefore, of man's "organs" or "members," we speak of those parts of the living machinery by which the elements are used up, or employed, for man's benefit. And this view of the subject, bearing in mind that the body is held together as the temple of a living spirit superior to mere flesh and blood, gives us a higher and clearer perception of the distinction between the body and the soul than that which we might otherwise possess. The body is a machine working for the spirit, which is its owner. While the machine works, the spirit directs and influences its actions. But when the machine stops, the spirit having now no power over a ruined temple, quits it, and flies to a region where, as a spirit, it becomes subject to a new order of existence consistent with its severance from earthly things and laws, and there it enters upon its eternal destiny, subject to the judgment and appointments of God. For it is now no longer dependent upon a relation between spiritual and material laws, and now the death of an organic machine can now no longer affect it.

Suppose that the air, in which man lives, instead of being clear, so that it were not perceptible to sight, were tinged with a green colour, like the waters of the sea. We should then see that, every time a man breathed, the air would rush in a stream into his mouth, and then return again; and the air which returned would, by becoming warm, be lighter than the outer air, and would rise upward over the man's head, where, cooling and mingling with the outer air, it would descend again. We do, in fact, see this action evidenced: when in winter time the cold condenses the vapour of the breath, we see the little cloud constantly rising before the breather's face, and dispersing in the surrounding air.

Now why does this air go in and out, and up and down? Because man lives upon some of the elements of which the air is composed.

Is it not a wonderful thing that that clear and elastic substance, which you cannot feel, though it touches every part of your body, and which you cannot see, is composed of two distinct bodies, having very different properties; and that these two bodies can easily be separated from each other?

Yes, this is indeed wonderful, and far excels the magic of the wizard, whom thousands of people flock to see, and into whose coffers they willingly pay thousands of pounds to have their eyes cheated and their senses deceived, instead of finding pleasure in the pursuit of truth, through experiments upon the interesting works of nature.

The elements to which we have alluded, as forming the air we breathe, are *oxygen* and *nitrogen*, mixed in the proportions of four of *nitrogen*, and one of *oxygen*. The air also contains a small quantity of *carbonic acid gas*, and usually a little water in the form of vapour.

When man breathes he takes the *oxygen* from the air, and throws off the *nitrogen*, and this oxygen combines with the blood in the lungs, and in that combination produces heat, and affords nourishment to the system. (*See the account of the circulation, p.* 116.)

Now, air is of the first importance to life. Hence it is provided for us everywhere. We require air every second, water every few hours, and food at intervals considerably apart. Air is therefore provided for us everywhere. Whether we stand or sit; whether we dwell in a valley or upon a mountain; whether we go into the cellar under our house, or into the garret at the top of it, air is there provided for us, in every nook and cranny. God who made it a law that man should breathe to live, also sent him air abundantly, that he might comply with that law. And all that is required from man in this respect is, that he will not shut out God's bounty, but receive it freely.

It is obvious enough that as man, every time he breathes, takes oxygen from the air, the air which he returns from his lungs must be impure, not only because of the amount of oxygen taken from the air, but because of the large proportion of carbonic acid gas, given off from the body through the lungs.

As we have employed the idea that if the air were coloured we should have the opportunity of marking the process of breathing, let us enlarge upon this, and suppose that every time the air was returned from the lungs it became of a darker colour, the darkness denoting its impurity. If we placed a man in a room full of pure air, we should see the air enter his lungs, and sent back slightly tinged, but this would disperse itself with the other air of the room, and scarcely be perceptible. As the man continued to breathe, however, each measure of air returning from the lungs would serve to pollute that abiding in the room, until at last the whole mass would become cloudy and discoloured, and we should see such a change as occurs when water is turned from a pure and clear state into a muddy condition.

Thus we see how important it is that we should provide ourselves with pure air; and that, in seeking warmth and comfort in our houses, we should always provide an adequate supply of fresh atmosphere—seeing that it is more vital to life than either water or food.

Indeed, so constant is our requirement of air, that *if we had to fetch it, for purposes of breathing, or simply to raise it to our mouths, as we do water when we drink, it would be the sole occupation of our lives—we could do nothing else.* For this reason, God has sent the air to us, and not required us to go to the air. And the great error of man has been that he has, in too many instances, shut off the supply from himself, and brought on disease and pain, by inhaling a poisonous compound instead of air of this healthful kind, which bears an exact adaptation to the wants of life.

Whilst the rooms of our house are filled with air, it is otherwise with water, which we require in so much less degree than air. If we have not the artificial means by which water is brought to our houses, through the pipes of a water company, there is a spring or a pump in the garden; or in the absence of this a good sound cask, standing at the end of our house, and, forming a receptacle to the water-pipes that surround it, provides us with a supply of water distilled from the clouds.

If we were to drink a good draught of water once a day, that would be sufficient for all the purposes of life, as far as regards the alimentary uses of water.

Man is therefore allowed to go to the stream for his drink, and is required to raise it to his lips at those moments when he requires it.

Water is composed of two gases, *oxygen* and *hydrogen*. But although, in breathing, man separates the *oxygen* of the air from the *nitrogen* thereof, he does not separate the *oxygen* of the water from the *hydrogen*. Water, in fact, undergoes no change in the body, excepting that of admixture with the substances of the body. And its uses are, to moisten, to cool, to cleanse, and also to nourish the parts with which it comes in contact. But it affords no nourishment of itself. It mixes with the blood, of which it forms a material part, and it is the means of conveying *the nourishment of the blood* to every part of the system. After it has filled this office, and taken up impurities that required to be removed, it is cast out of the system again without itself undergoing any chemical change.

With regard to food, the next important element of life, we have given an account (page 115) of the changes it undergoes, and which are called digestion.

And with reference to light and heat, we shall find something interesting to say of them when we come to speak of them under their specific heads.

We have now seen the organisation of man, and the relation in which he stands to the elements by which he is surrounded. The house in which man dwells is the temple which he has set up to facilitate his enjoyment of these elements—his happiness being derived from the right use of the good things with which God has surrounded him.

And we shall presently see how skilfully he has contrived to make that house a temple full of wonder, worthy of examination, and a home wherein, with a mind rightly constituted, he and his offspring might live supremely happy.

He has dug deep into the bowels of the earth, and brought up metals to serve his purposes; he has brought from the forest of far off lands trees with wood of beautiful grain to form furniture for his dwelling; he has cut quarries into the earth, and hewn out blocks of stone and sheets of slate to form the walls and the roof of his abode; he has melted the hard flint-stone into transparent glass to admit the light, but exclude the cold; he has made fire subdue iron, and then has employed the iron to controul the fire; he has dug into the bowels of the earth and opened vast stores of pre-adamite vegetation; and with this he warms his dwelling and prepares his food; he makes the same air which he breathes waft ships across the sea, to bring to him in his house the fruits and the treasures of other lands; if the winds speed not quickly enough he calls fire and steam to his aid, and with wheels, propelled by these elements, allied to mechanical power, the ship speeds onward in spite of wind and tide; he casts corn into the earth, and when he has gathered the ripened ear, he makes the wind or the water grind it into flour, out of which he makes his bread; he has taken the horn of the ox, the tusk of the elephant, the skin of many quadrupeds, the feathers of birds, the thread of the silkworm, the wool of the sheep, and worked and woven them into articles of furniture or dress. So that in every house may be seen the productions of many lands, the offerings not only of the surface, but of the bowels of the earth, the tribute to man of animals of all kinds and climates. And so familiar has man become with these privileges and enjoyments, so easily do they flow into his possession, that he scarcely knows the sources whence they are derived, nor the discoveries and the perils by which they were first made available to him.

For these reasons we shall endeavour to call back to man's recollection the sources from which those things spring, and the names of those benefactors of mankind who, from generation to generation, have contributed to make "Our House" so replete with blessings and enjoyments, and so interesting a field for a "Journey of Discovery."

WHAT IS FIRE?

Child. Mother, you told me, the other day, that nobody knows what light is, except the great Creator. Now, can you tell me what fire is?

Mother. I fear that you have asked another question which I cannot directly answer. What fire is, is known only by its effects.

Child. And what are its effects, mother?

Mother. Some of its effects are as well known to you as they are to me; and I shall, in the first place, call to your recollection what you, yourself, know about fire, before I attempt to give you any further information in relation to it.

Child. Why, mother, I am sure I do not know what fire is.

Mother. No, my dear, I know that you do not know what fire is; neither do I, nor does any one, except the great Creator himself. This is one of his secrets, which, in his wisdom, he reserves for himself. But you certainly know some of the effects of fire. For instance, you know that when you have been out into the cold, you wish, on your return, to go to the fire. Now, can you tell me what you go to the fire for?

Child. Why, certainly, mother; I go to the fire to warm myself.

Mother. And how does the fire warm you?

Child. Why, it sends out its heat, mother; and I hold out my hands to it, and feel the heat.

Mother. And where does the heat come from?

Child. Why, the heat comes from the fire, mother.

Mother. Then you know, at least, one of the effects of fire. It produces, or rather sends out heat.

Child. But does not the fire make the heat?

Mother. If you had a little bird, or a mouse, in a cage, and should open the door and let it out, should you say that you *made* the little bird or the mouse?

Child. Say that I made them, mother? Why, no; certainly not. I only let them go free. God made them. You told me that God made all things.

Mother. Neither did the fire make the heat. It only made it free, somewhat in the same manner that you would make the bird or the mouse free, by opening the door of the cage.

Child. Why, mother, is heat kept in cages, like birds or mice?

Mother. No, my dear, not exactly in cages, like birds and mice; but a great deal closer, in a different kind of cage.

Child. Why, mother, what sort of a cage can heat be kept in

Mother. I must answer your question by asking you another. When Alice makes her fire in the kitchen, how does she make it?

Child. She takes some wood, or some coal, and puts under it some small wood, and some shavings or paper, and then takes a match and sets it on fire, and very soon the fire is made.

Mother. But does she not first do something to the match?

Child. Oh, yes; I forgot to say that she lights the match first, and then sets fire to the shavings with the lighted match.

Mother. But how does she light the match?

Child. Why, mother, have you never seen her? She rubs one end of the match on the box, where there is a little piece of sand-paper, and that sets the match on fire.

Mother. Is there any fire in the sand-paper?

Child. Why, no, mother; certainly not.

Mother. Was there any fire in the match before she lighted it?

Child. No, mother; if there had been, she would have had no need to light it.

Mother. You see, then, that fire came when she rubbed the match against the sand-paper, and that the fire was not in the sand-paper, nor in the match.

Child. Yes, mother; but I did not see where it came from.

Mother. Did you ever see a person rub his hands together, when he was cold?

Child. Oh, yes, mother, a great many times. I have seen father come in from the cold and rub his hands together, and afterwards hold them to the fire and rub them again, and then they get warm.

Mother. And now take your hand and rub it quickly backward and forward, over that woollen table cloth, on the table in the corner of the room, and tell me whether that will make your hand warm.

Child. Oh, yes, I feel it grow warmer the faster I rub it.

Mother. Here are two small pieces of wood. Touch them to your cheek, and tell me whether they feel warm.

Child. They do not feel warm, nor cold, mother.

Mother. Now rub them together quickly a little while, and then touch them to your cheek.

Child. Oh, dear, mother! they are so hot that they almost burned my cheek.

Mother. Yes, my dear; and do you not recollect, when you read "Robinson Crusoe," that his man Friday made a fire by rubbing two pieces of wood together?

Child. Oh, yes; and I have often wondered why Alice could not light her fire and the lamp in the same manner, without these matches, which have so offensive a smell.

Mother. It is very hard work to obtain fire by rubbing two pieces of wood together; and it would take too long a time to do it. The two pieces of wood would grow warm by a very little rubbing; but in order to make them take fire, they must be rubbed together a great while.

Child. But, mother, if it takes so long a time to get fire by rubbing two pieces of wood together, why can Alice set the match on fire so easily by rubbing it once on the sand-paper?

Mother. That is what I am about to explain to you. Here, take this piece of paper and hold it up to the lamp.

Child. It has taken fire, mother.

Mother. Now take this piece of pine wood, and hold that up to the lamp in the same manner, and see whether that will take fire too.

Child. Yes, mother, it has taken fire; but I had to hold it up to the lamp much longer than I did the paper.

Mother. Now, take this piece of hard wood, and do the same with that.

Child. The hard wood takes longer still to catch fire, mother.

Mother. Yes. And now I am going to make the hard wood take fire more quickly than the paper did.

Child. How can you do it?

Mother. I am going to show you. Here is a small vial, which contains something that looks like water. It is spirits of turpentine. I shall dip the point of the piece of hard wood into the vial, and take up a little of the spirits of turpentine. Now touch the point of the hard wood with the turpentine on it to the flame.

Child. Why, mother, it caught fire as soon as I touched the flame with it!

Mother. And you now see that some things, like the spirits of turpentine and the paper, take fire very readily, and others take fire with more difficulty.

Child. Yes, mother; but when Alice drew the match across the sand-paper, there was no flame nor fire to touch it to. How, then, could it take fire?

Mother. Hold this piece of paper up to the blaze of the lamp, but be careful not to touch the fire or flame of the lamp; only hold it close to the blaze.

Child. Why, mother, it has taken fire!

Mother. You see, then, that a thing will sometimes take fire when it does not touch the fire.

Child. Yes, mother; but I do not understand where the heat comes from.

Mother. The fire comes from the heat. Now, you know that heat is produced by rubbing two things together; and that some things, like the spirits of turpentine, take fire very easily, or with very little heat; and others, like the hard wood, require to be heated some time; or, in other words, require much heat to make them take fire, or to burn. Some things require only as much heat to make them take fire as can be obtained by rubbing them together very quickly, like the wood which Robinson Crusoe's man Friday used.

Child. But, mother, the match is made of wood; why does that take fire so easily?

Mother. It is true that the match is made of wood; but it has something at the end of it which takes fire much more easily than the spirits of turpentine. Indeed, so easily does it take fire, that it requires only so much heat to set it on fire as is obtained by drawing the match once across the sand-paper.

Child. Well, mother, I understand, now, how the match is set on fire. It is rubbed on the sand-paper, and that produces heat, and the heat sets the match on fire. But I always thought that fire makes heat, not that heat makes fire.

PROPERTIES OF AIR.

Henry. Good evening, uncle; I have come to ask you a few questions about the air.

Sidney. I am glad to see you: but where are the other children?

Henry. They are at home, learning their lessons. I told them I would come and ask a few questions about the air, to-night, and that when I returned would tell them what you said.

Sidney. You are so kind to your brothers and sisters, Henry, I shall be pleased to tell you all you wish to know.

Henry. Well, uncle, you have told us many interesting facts about winds, which, you say, are caused by the air becoming heated more in some places than in others. Now, I should like to know what air is? (See p. 318.)

Sidney. The air is composed of two gases—*oxygen* and *nitrogen*. The oxygen sustains life, and makes the candle and lamp blaze and give light, and the wood and coal burn, to give us heat.

Henry. What, then, is the use of the nitrogen in the air when the oxygen supports life and flame?

Sidney. The principal use of nitrogen is to dilute the oxygen, so that in breathing we may not inhale too much of it. If a man or an animal should inhale pure oxygen, he would breathe so fast as to soon wear himself out.

If a plant were placed in oxygen it would soon burn up; and if the air was all nitrogen, neither plants nor animals could live.

Did you ever hear of laughing-gas, Henry?

Henry. Yes! our teacher told us something about it; and said, that if any person should inhale it, he would laugh very heartily, and could not help it. It must be very curious.

Sidney. It is so, but I will tell you a curious fact about it. Laughing gas is composed of about *thirty-six* and *one-third* parts of oxygen, and *sixty-three* and *two-third* parts of nitrogen.

The air we breathe contains *twenty-three* parts of oxygen, and *seventy-seven* parts of nitrogen.

Now if the air contained a few more parts of oxygen, and a few less of nitrogen, it would form laughing-gas. Then, what laughing and grinning there would be! We should not see cross boys nor pouting girls; everybody would be laughing.

But the air does contain enough of these gases to give us happy, cheerful countenances, and we should try to possess such.

What wisdom is displayed in making the air in which we live of such ingredients as will impart to us cheerfulness and pleasant feelings! Truly we ought to be happy!

Henry. O, uncle, where can I learn more about these things?—they are very interesting.

Sidney. The study of chemistry will teach you about them, and a great many more interesting and useful things in nature.

Henry. Thank you, uncle; I am so glad I came to see you this evening. But I must hasten home now, and tell my brothers and sisters what I have learned. Good night, uncle.

INCUBATION.—I have kept an account for some years of the time my various birds sit, and the following is a list of the time occupied in hatching their eggs:—Canary birds, 14 days; doves, 14; pigeons, 16; fowls, 21; guinea-fowls, 25; ducks, 26; turkeys, 26; geese, 31; Muscovy ducks, 35. Although ducks and turkeys hatch in 26 days each, I have found, when the eggs were set together, that the turkey eggs hatched about six hours earlier. I believe the above list to be quite correct; but I have known most of them occasionally to have been longer through accidental causes.

INCREASE OF HEAT IN SUMMER.

SUMMER may be said to be the season of growth, as spring is of reproduction. Those organised existences, which burst into life in the latter season, are either brought to maturity, or, at least, invigorated and expanded, in the former; and, in both seasons, the peculiar character of the weather is most wisely adapted for the intended object. The state of the atmosphere, during the progress of the summer months, presents itself as an appropriate subject of consideration, in entering on the study of this season.

The sun is now approaching the northern tropic, having, in the month of March, passed from the south to the north of the equator. He is rising high in the heavens, and thus pouring his rays more directly on this part of the earth, which, according to a principle already explained, causes his influence to be more powerful; and what much adds to this influence, is the greater length of time in which he remains above the horizon. In the depth of winter we enjoyed his presence little more than seven hours out of the twenty-four. In the beginning of summer this period is increased to upwards of fifteen hours; and in the middle of it he daily lingers with us two hours longer still. There is thus not only a great direct increase, but a great accumulation of heat. The mode in which this effect is produced may be shortly mentioned. The rays of the sun, or whatever the influence may be which generates the heat, in passing through a perfectly transparent medium, do not increase the temperature of that medium. They seem to require resistance to produce this effect. It is not, therefore, till they reach the earth, that their power is very sensibly exerted. In striking upon the opaque surface of our globe, they give out their qualities. Light and warmth are produced and reflected. The earth and the atmosphere are thus both subjected to their influence. These become heated, the one by conduction, the other by reflection. Now, it is obvious that while the intensity must be in proportion to the directness with which the globe is struck by the sun's rays, the accumulation must be in proportion to the length of time during which the influence continues. Hence, there is a double cause for the summer's heat,—the height to which the luminary rises in the heavens, and the length of the day compared with the night. These causes operate in an increasing ratio. Day after day the accumulated heat receives fresh accessions. Every time the sun's influence is repeated it penetrates deeper below the surface, and is more intensely reflected into the already heated atmosphere. This effect continues even after the direct solar heat has begun to be diminished; and it is not till several weeks after the sun has begun to take a retrograde motion, that the temperature is at its maximum. In June the sun reaches his greatest height, and begins to decline, but the heat continues to increase till the middle or end of July.

But there are various circumstances besides warmth, which constitute summer weather. The mechanism of the atmosphere is very complicated, and the adjustments which it requires are exceedingly nice, and, considering merely the nature of the powers employed, we may well add, hazardous. Any change in the relative proportion of one of the principles is calculated to produce a powerful effect on all the rest; and were there not a regulating power of consummate wisdom, it might be expected that the balance would be overset, and that the most disastrous consequences would ensue. Let us look for a moment at the constituents of the atmosphere, and this will become apparent. The air, which forms the chief part of the atmosphere, is composed of two substances, held together merely by mechanical admixture, which are of very different properties, and which require to continue united in the precise proportion they actually bear to each other, in order to be capable of sustaining animal and vegetable life. Were that proportion destroyed even in a slight degree, the air we breathe would be instantly converted into a deadly poison. Now, it is well worthy of remark, that, although in the functions both of animal and vegetable life, and in the process of combustion, a great and apparently unequal consumption of these two substances takes place, the proportion between them is always maintained, and that notwithstanding any difference of temperature. Heat expands, and cold contracts them; but they are not thus disunited, or in any way disturbed in their proportions. On the contrary, it is probably in some degree owing to the alternations of heat and cold, which keep up a constant motion in this wonderful fluid, that the necessary balance is maintained.

Another ingredient in the atmosphere is moisture. This is very sensibly acted on by heat. It is the principle of heat which evaporates the moisture from the earth, and causes it to mix with the air, and to float in it, sometimes as an invisible fluid, sometimes in the form of clouds, and which at other times causes it to be precipitated in the form of rain. Now, the remarkable circumstance is, that although heat is the agent in these operations, the change of temperature does not so affect the process as to cause the operations to cease, or very materially to disturb them. Evaporation goes on both at a low and a high temperature, and in both states clouds are formed and rain falls. This is owing to a very peculiar provision, obviously imposed by consummate wisdom. The air is made capable of containing vapour in a certain proportion to its temperature; and it is not till it be saturated that the evaporation from the surface of water ceases, or that deposition takes place. The temperature of the air in winter does not, indeed, admit of the same quantity being held in solution as in summer: but up to a certain point it is equally capable of sustaining it in the one case as in the other. Evaporation, therefore, takes place in very cold weather, even from ice and snow; and the water thus infused into the air is carried up into the higher regions, till it reaches the point where the temperature is such as to correspond with the quantity of moisture. Precisely the same process takes place in summer, with this difference, that the evaporation is much more abundant, and the air, owing to its increased temperature, is capable of containing a far greater quantity in solution. Again; the point of deposition is regulated by a similar law, with a similar difference. Deposition does not take place either in winter or summer, till the air is more than saturated; but this effect is produced at very different temperatures, according to the quantity actually held in solution, so that a very slight degree of cold will form clouds and cause rain in summer, compared with what is necessary to occasion the same phenomena in winter. Hence the processes of evaporation and deposition are made, by this very peculiar law, always to bear a relation to the actual temperature of the season; and such a balance is kept up between these processes, as is admirably suited to the wants of vegetable and animal life.

I may add to all this the properties of the atmosphere, by means of which it is made the vehicle of light and sound, and the means of respiration. The changes which the air undergoes by the operation of heat and cold, might easily be supposed, and might even perhaps, reasoning without the aid of experience, be expected to produce a material alteration on such properties. But although these changes are so considerable in different seasons, and in different climates, we do not find that the laws either of vision or of acoustics are in any material degree affected by them,—or that the action of the lungs, either in man or the lower animals, is impeded or deranged.

In attending to the complicated nature of the atmosphere, and the various important functions it has to perform, and in considering the diversified modifications it must necessarily undergo by the alteration of its temperature, both in the various latitudes of the globe, and in the different seasons of the year, it does seem impossible to doubt that the uniformity of its properties, and of its salutary influences under all these modifications, has been provided for by what Whewell, considering that subject in a more extended view, justly calls "a most refined, far-seeing, and far-ruling contrivance." So many opposing forces, and the mingling of such subtle and fearfully active elements, appear in the most quiescent state to require amazing prospective skill for their regulation and control; and when we find them, even under the influence of extensive changes, still harmoniously combining their powers for the general good, we cannot but perceive that all this could not be effected but by the same Paternal hand which originally called their powers into action.—*Sacred Philosophy of the Seasons.*

BEAUTY.

Beauty is a principle, either in nature or art, that gratifies the senses, and leaves upon the mind the impression of a certain grace and proportionate fitness of parts. There is, throughout the material universe, a congruity in all the workings of nature, that gives to our observations a peculiar interest; and that, too, in proportion to the vigour of our investigations.

We may admire a rock, because it is one of the features that gives beauty and variety to the landscape; we may have our wonder and interest excited, as we reflect that it may be "as ancient as the sun;" and we pause in contemplation of that Power, whose care has imbued it with principles that defy the changes of time, and the war of the elements.

But a new impetus is given to our curiosity, and fresh ardour to our inquiries to learn more of nature, when we perceive that which at a distance appeared to be a homogeneous mass of stone, is bound together by an aggregation of particles, each differing from the other, in hue, consistence, and composition, yet all together forming a grand whole.

Take also the wing of a butterfly;—the eye is delighted with the variety and brilliancy of the hues that are depicted on it;—and yet how many, as the bright insect flutters across their pathway, stop to think of the exquisite skill displayed in the construction of that wing? That which to the eye of the attentive observer appears like a soft down, if attentively examined by the aid of a microscope, will prove to be an infinity of delicately-constructed feathers.

Flowers, too, the wild wood flowers that greet us by thousands in our daily walks, are teeming with beauty. "They have tales of the joyous woods to tell" by the couch of suffering, and they bear the message of hope to the desponding. "Flowers! ye form the bridal chaplet, and ye go down to the grave with the coffined ones."

At a ball given at Nottingham, in honour of Lord Howe's victory, on the 1st of June, 1794, amidst the glare of diamonds, pearls, and plumes, there was one lady whose head-dress consisted of a simple wreath formed from a branch of natural oak. On the following morning after breakfast, the Countess Howe, in the presence of the company, planted three of the acorns taken from the wreath; they germinated, and at this day, form three handsome trees. While thus evincing her taste, the lady could not have found a more efficient method of perpetuating her memory.

The idea of beauty is universal; wherever there are hearts and minds that can be influenced by external causes; wherever there are ears that hear with delight the varied minstrelsies of nature, or eyes that can behold with pleasure the pictures from a master's hand—that are continually free to the view—that can read with interest the volume ever open to the student of nature, beauty has there an empire; and in this perception of the beautiful, not only is the natural taste gratified, but it bestows a graceful refinement upon its votary; it ennobles the intellect, and lends a heightened lustre to the moral qualities.

No less beneficial are its effects upon nations. Look at Italy and Greece. "Their glorious day is o'er." The orators whose eloquence could move a nation are heard to speak no more; the hand that could give life to marble is palsied by death; and the bard "who struck with magic art the lyre," long ago sang his last song. But are they forgotten? No! their laurels are yet as green as on the day when awarded amidst the applause of the multitude.

The sun of political power is gone down amid clouds of gloom, yet—

> "Pilgrim's pensive, but unwearied throng,
> Hail the bright clime of battle and of song."

For art has there reared to herself a monument, that still commands the admiration of the civilised world, and has erected a shrine at which genius still delights to pay homage.

DIETETIC USE OF WATER.

Water is an inestimable benefit to health, and as it neither stimulates the appetite to excess, nor can produce any perceptible effect on the nerves, it is admirably adapted for diet, and we ought, perhaps by right, to make it our sole beverage, as it was with the first of mankind, and still is with all the animals. Pure water dissolves the food more, and more readily, than that which is saturated, and likewise absorbs better the acrimony from the juices—that is to say, it is more nutritious, and preserves the juices in their natural purity; it penetrates more easily through the smallest vessels, and removes obstructions in them; nay, when taken in large quantity, it is a very potent antidote to poison.

From these main properties of water may be deduced all the surprising cures which have been effected by it in so many diseases, and which we shall here pass over altogether. But as to the dietetic effect of water, we shall recommend it to our readers for their ordinary everage on three conditions.

The first is, that they drink it as pure as possible. Impure water is of itself impregnated with foreign matters which may prove prejudicial to health. Hence it loses all the advantages which we have in the preceding remarks ascribed to water; and it would in this case be much better to drink beer, or any other such beverage, that is saturated with nutritive particles, rather than impure water. We must leave the stomachs of camels to answer for the preference given by them to muddy water; for we are assured by Shaw, that these animals stir it up with their feet, and render it turbid before they drink. The human economy requires, on the contrary, a pure beverage.

The signs of good water are, that it easily becomes hot and cold; that in summer it is cool, and in winter slightly lukewarm; that a drop dried on a clean cloth leaves not the faintest stain behind; and that it has neither taste nor smell. It is also a sign of good water, that when it is boiled it becomes hot, and afterwards grows cold, sooner than any other water. But this sign is far more fallible than the evidence of the quality of water obtained by feeling. Singular as this may sound, it is very possible to distinguish the properties of water by means of this sense. A soft or a hard water is synonymous with a water the parts of which adhere slightly or closely together. The slighter their adhesion, the less they resist the feeling, and the less sensible they are to the hand, because they may be so much the more easily separated. A gentleman of our acquaintance has for many years used two different sorts of water, which are equally pure and limpid, the one for drinking, and the other for washing his hands and face. If his servant ever happens to bring the wrong water for washing, he instantly discover the mistake by the feeling. Our cooks and washerwomen would be able to furnish many other instances of the faculty of discriminating the properties of water by the touch, which would show that this faculty depends more on the excitement occasioned in the sensible parts than on any other cause. Hard water, for instance, makes the skin rough; soft, on the contrary, renders it smooth. The former cannot sufficiently soften flesh or vegetables; the latter regularly produces this effect. The difference of the extraneous matters which change the qualities of water, naturally makes a different impression on the feeling; and in this there is nothing that ought to astonish a person of reflection.

The water of standing pools and wells

is in general extremely impure, and is accounted the worst of all. River-water differs according to the variety of the soil over which it runs, and the changes of the weather; but though commonly drank, it is never pure. Of all impure river-waters, those which abound in earthy particles alone are the least injurious, because those particles are not dissolved by the water. In Auvergne, near the villages of St. Allier and Clermont, there is a stream of a petrifying quality, which constructs of itself large bridges of stone, and yet it is the only water drank by the inhabitants of those places, and that without the slightest inconvenience. If we consider that a stony concretion is deposited in all our kettles, we shall readily conceive that a water which carries stone along with it cannot be very pernicious to health, since it is constantly drank by men and animals. This stone in our kettles is really a calcareous earth, which may be dissolved by boiling in them vinegar, or water mixed with a small quantity of nitric acid; and as the water deposits it, and does not hold it in solution, it can of course do us very little injury. We cannot, therefore, imagine how the celebrated Dr. Mead could believe that water which leaves such a deposit in culinary vessels may occasion a particular disease, merely because Pliny has said so; though he was well acquainted with the great difference between animal calculi and more calcareous earth.

Next to well and river-water, both of which are always impure, rain-water follows in the scale of preference. It is very impure, and a real vehicle for all the pernicious matters that are continually floating in the atmosphere. Snow-water is much purer. Snow is formed of vapours which have been frozen before they could collect into drops. It is in the lower region of the air that these drops, in falling, absorb most of their impurities. The vapours floating in the upper atmosphere freeze before they reach the mire of the lower. This water is seldom to be had. That which we would most strongly recommend for drinking is a spring-water, which descends from lofty hills, through flints and pure sand, and rolls gently along over a similar bed of rocks. Such water leaves behind all its coarse impurities in the sand; it is a purified rain and snow-water, a fluid crystal, a real cordial, and the best beverage for persons in good health.

The second condition which I attach to water-drinking is, that such persons only choose it for their constant beverage, to whom warming, strengthening, and nutritive liquids are hurtful; and that if they have not been in the habit of drinking it from their youth, they use some caution in accustoming themselves to it. Many suffer themselves to be led away by the panegyrists of water, without considering that even good changes in the system of life, when a person is not accustomed to them, and when they are abruptly or unseasonably adopted, may be productive of great mischief. Hence arise the silly complaints that water-drinking is dangerous, pernicious, nay, fatal, and the inapplicable cases quoted from experience Those who have been in the habit of drinking water from their youth, cannot choose a more wholesome beverage, if the water be but pure. Many nations, and many thousand more species of animals, have lived well upon it. But for an old infirm person, a living skeleton, with a weak stomach that can scarcely bear solid food, to exchange nourishing beer or strengthening wine with the water of his brook, would be the height of absurdity. Let such adhere to their accustomed drink. Water is an excellent beverage, but beer too is good; it is also water, more nutritious than the pure element, and therefore more suitable for the persons to whom we allude.

The third condition which we require from water-drinkers is, that they take cold and hot water for their habitual beverage. We mean not to prohibit their boiling or distilling it, if they suspect it to be impure. Boyle drank nothing but such distilled water, and most delicate people of good taste in Italy still do the same. It must not, however, be drank warm, but cold, The ancients, it is true, drank hot water. Various passages in Plautus and other ancient writers clearly prove that so early as their times it was customary to drink the water of warm springs: and there are frequent instances of common water warmed. Thus, in Dio, we find Drusus, the son of Tiberius, commanding warm water to be given to the people, who asked for water to quench their thirst at a fire which had broken out. Seneca says (*De Irâ*, ii. 15), that a man ought not to fly into a passion with his servant if he should not bring his water for drinking so quickly as he could wish; or if it should not be hot enough, but only lukewarm; and Arrian says the same thing, but more circumstantially. The drinking of hot water must of course have been a common practice with the Greeks and Romans; but it should be observed, that even in their times it was held to be an effeminate indulgence of voluptuaries. Stratonicus calls the Rhodians "pampered voluptuaries, who drink warm liquors." Claudius, when he attempted to improve the morals of the people, and to check luxury at Rome, prohibited the public sale of hot water. When, on the death of the sister of the Emperor Caius, he had enjoined mourning in the city of Rome on account of this exceedingly painful loss, he put to death a man who had sold hot water, for this very reason, because he had thereby given occasion for voluptuousness, and profaned the mourning. So dangerous an indulgence was the drinking of hot water considered, that the trade of water-sellers was interdicted by the censors. Some writers publicly satirised this species of voluptuousness. Ammianus complains that in his time servants were not punished for great vices and misdemeanours, but that three hundred stripes were given them, if they brought the warm beverage either not promptly enough or not hot enough: and from that passage of Martial's in which he says, that, at entertainments, the host was accustomed to pay particular attention, that during the feast there should be an abundant supply of hot water, it appears that this beverage was an essential requisite at the tables of the luxurious.

HINTS UPON CONDUCT.*

A KING says "My wife." There are shopkeepers who say "My spouse." These fellows have always set up for giving lessons to governments. As to the shopkeeper's spouse, she talks of "Our young lady," thereby giving a lesson to the inhabitants of the Faubourg Saint Germain, who simply say "My daughter."

Naturalness is an essential item in good-breeding. Hear what La Bruyère thinks on this important question. "Some young people do not sufficiently understand the advantages of natural charms, and how much they would gain by trusting to them entirely. They weaken these gifts of heaven, so rare and fragile, by affected manners and an awkward imitation. Their tones and their gait are borrowed; they study their attitudes before the glass until they have lost all trace of natural manner, and, with all their pains, they please but little."

Without being vain, a young girl should be careful of her person. Nothing is more repugnant to good taste, than an air of neglect in the toilet and deportment of a woman. The hair and head-dress especially, require care and neatness.

Beware of imitating those people who never know what to do with their bodies, and can never keep their hands quiet.

Swinging on one's chair is extremely ill-bred.

The eye-glass stuck in the eye, denotes either the dandy, the clerk, or the student. This custom is in no way disagreeable to the passers-by, but it has an air of ill-breeding and impertinence.

To follow a lady in the street, and turn the head to stare at her, is still more impertinent than to do so in a promenade, especially in Paris, for reasons which cannot be further adverted to in a book intended for young persons of both sexes.

Familiarity with servants should be avoided, but they should always be addressed with civility.

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* From *Parisian Etiquette*. J F. Shaw.

Noble families do not encourage children to use the pronoun *thou*, in speaking to their parents.* In defiance of fashion we venture to blame this custom. The *thou* and *you* have nothing to do with filial respect.

Some people, in speaking to you, have a silly habit of passing their hand through the hair, or stroking the moustache; some even carry a pocket comb, which they produce on all occasions, for dressing the beard: others bite their nails, play with their watch-key, or jingle the money in their pocket; all these offences against propriety denote a want of good breeding.

Excess in perfume should be avoided, lest the suspicion be excited that you deal in the odours that you exhale.

The name of the person you are addressing should not be added after Monsieur and Madame.

Good sense has often more to do than education in making a polished man.

One of the essential qualities of good-breeding, is deserving general esteem by one's deportment.

In little social games, a malicious girl will sometimes amuse herself by imposing on a companion a forfeit that will make her ridiculous; this shows a bad disposition of mind as well as ill-breeding.

If, in offering a lady a gift, you select one that is very costly, you may be guilty of an impertinence.

To speak in society of private matters, is extremely improper.

Turning up the sleeves on sitting down to table, as some people do, is gross in the highest degree.

A habit of swearing constantly, marks a vulgar man.

Calling to the waiter with a loud voice in a public-room, and striking violently on the table, are indicative of extreme ignorance.

A snuff-taker should not take out his box at table; his neighbour will be little pleased at receiving the stray grains in his plate.

Indiscreet questions are impertinent, as well as unseasonable harangues.

You should be ready to act the knight, if a lady in your company is attacked. If she give offence, and that without reason, your office is only that of mediator. You should even ask pardon for your companion. A bully would act otherwise; but it is absurd to get into a quarrel for the sake of maintaining that a person who is insolent has a right to be so, and that because he is of your company. You will show yourself, in acting thus, as ill-bred as he.

If, in doing an obliging act, you make people feel the obligation, you deprive it entirely of its value.

A young girl should never write to her lover.

To fill a glass to the brim is ungenteel.

If you speak of a friend to a person who is not intimate with both him and you, preface his name with the word Monsieur. It would not be proper to say to a servant or a porter—"Is Julius here?" You must say "Is Mr. Julius here?"

A servant who understands propriety, always speaks of his superiors in the third person.

When you receive a present, it would be an offence to the donor to dismiss the porter without a gratuity.

If the honour of a woman be attacked you should always defend it. It is not allowable for any one to assail the reputation of a lady, even if she be open to censure.

In walking with a lady in the street, leave her the inner side of the pavement. If you meet friends in a narrow passage, or on a footpath, be careful not to block up the way. It would be very impolite to inconvenience the passers-by in this manner.

DOMESTIC EDUCATION.

The character of most individuals is almost wholly to be traced to domestic education. Our first sensations necessarily produce the greatest effects; and the power with which they act upon the susceptibility of the tender mind is evidenced in the charm of domestic ties, local attachments, and patriotic feelings. The earliest succession of ideas to which we are accustomed form our primary habits, whether for good or evil; and these are seldom or never eradicated. But what can be learned at the house of a drunkard and a slut, whose improvident union was hastened by sin, who are degraded in body and mind; where disorder, poverty, and strife, are ever in the ascendant? Or, how can dirty and neglected children, associated with none superior to themselves, acquire a single beneficial habit, or experience a single train of wholesome ideas, in the absence of parental care, in their desolate homes? What domestic, what local attachments, what patriotic, what generous or virtuous sentiments, can be expected in such quarters?

Everything which disconnects our minds and being from our parental hearth, must needs have a debasing and pestilential influence; but what can be done to ameliorate the condition of such helpless ones? Even amongst the higher classes, children are left too much to themselves, or with servants; but here the evil seems to be unmixed with a single redeeming feature. "The beaten track of customary vice" is followed without scruple. "Parents, be virtuous," said the heathen satirist; "if, on no other account, at least for the sake of your children." Our infant schools may effect some good; but at best they are imperfect substitutes for what parents ought to be zealously accomplishing for themselves, and none but parents can accomplish. Home should be rendered the happiest of all the scenes of our childhood, endeared to us by a thousand lovely associations cherished in strong memory on account of the noble and generous feelings there excited. Then, its remembrance would hang like an enchanted spell upon the tempted youth; and, if he fell, ever whisper in the ear of the wayward prodigal a loving invitation to return and be blessed again

"The child is father of the man;
And I could wish my days to be
Bound each to each by natural piety.

"The thought of our past years in me both breed
Perpetual benediction: not indeed
For that which is most worthy to be blest—
Delight, and liberty, the simple creed
Of childhood, whether busy or at rest,
With new fledged hope still fluttering in his breast—

* * * * * * *

"But for those first affections,
Those shadowy recollections,
Which, be they what they may,
Are yet the fountain-light of all our day,
Are yet a master-light of all our seeing,
Uphold us, cherish, and have power to make
Our noisy years seem moments in the being
Of the eternal silence; truths that wake,
To perish never:
Which neither listlessness nor mad endeavour
Nor man nor boy,
Nor all that is at enmity with joy,
Can utterly abolish or destroy!

"Hence, in a season of calm weather,
Though inland far we be,
Our souls have sight of that immortal sea,
Which brought us hither;
Can in a moment travel thither,
And see the children sport upon the shore,
And hear the mighty waters rolling evermore."
WORDSWORTH.

But a painful illustration of the influence of early association is afforded by the history of Lord Bacon. The royal presence and favour, which he attracted as a quick and interesting child, seem to have raised ambitious hopes in his aspiring mind before his judgment could control them. The love of state, and pomp, and worldly grandeur, or the service of royalty, thus became, as he calls it, his "first love,"—his strongest passion, which all his delight in philosophical meditation and studious retirement, and all the natural impulse of his powerful genius, could not subdue. He was trained to be a courtier almost from his cradle; and hence arose all those mean and shuffling arts and evasions, which have so fearfully sullied his glory, as they corrupted his noble disposition, and even dimmed the lustre of his eye.

It is obvious that correctness and elegance of language will be most easily acquired, when those with whom we have most constantly associated in early years have possessed these accomplishments, and thus formed our ear and sharpened our tongue. The Roman orator strikingly illustrates this, by the case of Curio. He was very illiterate, and even ignorant: he thought slowly; his arrangement was bad; his memory most defective; and his action so awkward, as he rolled himself violently about, as to excite general ridicule. His education, as a neglected ward, had been of the most wretched character; and yet, so great was the force of domestic association, that his language was fine, and his fluency of expression admirable.—(Cic. de Brut., sec. 59.) If such a happy talent was thus acquired without effort, what might not have been accomplished by well-directed labour! We have been recently informed that Sir Robert Peel derived his fluency and eloquence from the manner in which his father had trained him up from early boyhood, to speak from a table on any subject suggested to him. Applause stimulated his efforts, however imperfect at first, until the habit was acquired, which was afterwards so admirably matured. Such an anecdote is, at least, strikingly illustrative of the success which might be reasonably expected to crown similar persevering efforts.

Cicero beautifully says: "We have read the letters of Cornelia, the mother of the Gracchi. It is evident that her sons were nursed (*educatos*) in her discourse more than in her lap." Women, indeed, of energy, piety, or talent, have exercised a prodigious influence over their children. It is said that these commonly resemble their mothers in their intellectual qualities; and that this fact accounts for the notorious deficiency in the sons of Tully and Lord Chesterfield. Cleobulus vainly urged his countrymen to educate their females; the few who followed his advice witnessed the beneficial result. We cannot be surprised at the love of pleasure, frivolity, and external embellishment which distinguishes the mass; it is the vacancy of untutored minds which is thus manifested; they feed upon husks, because no solid nourishment has been ever provided for them. In order to arrest the evil, we must direct them to higher and nobler objects: we must educate them thoroughly, and with earnest diligence. They will subsequently mould the character of their sons, and impart to genius and to virtue a softness and delicacy which can be found nowhere else. Their love and tenderness will render their influence permanent and paramount, as "in sweet and kindly tones and words, they direct the opening mind to nature, to beauty, to acts of benevolence, to deeds of virtue, and to the source of all good, to God Himself."

The great defect of domestic training in general is the habit of cherishing pride and vanity in children, and of allowing them to have their own way in everything. It is forgotten that a spoilt child must pass into a selfish and opposing world, and that the contradictions and trials to which he must then be exposed so unexpectedly, may render his existence a sore burthen to himself. The hot-house plant sickens and dies in our harsh climate when protection is withdrawn.

If our early trains of ideas create a habit of over-valuing any pleasure or pain, too much will be sacrificed during life to obtain the one or avoid the other. We shall be in prodigious haste to realise a pleasure as soon as desired, or to extinguish a pain as soon as felt. But these results can only be attained by a series of steps, frequently numerous ones; and, if impatience hurry us to overlook these, we may sacrifice more than we gain. It is desirable that parents should follow the order of nature, and never thwart it, and thus contribute to form correct associations in the minds of their children, as to the connexion between pain and sin on the one hand, and pleasure and good conduct on the other, and as to the importance of the constant exercise of patience and self-control.

GARDENING FOR JULY.

The Flower Garden.—As roses continue to be the objects of great attraction, they must have corresponding attention paid to them: supply them constantly with water and liquid manure. Never trim off a single branch of the dahlia, unless it is in the way of others; train them out of each other's way, and take the neighbouring buds off any branch that has a promising flower opening for show. Geraniums may be cut down, and the cuttings put in a common border; a hand-glass over them is sufficient to strike them; in fact, a great number would take root without. Propagate pansies from small side shoots whenever you can take them; plant out seedlings that are large enough in rich soil, distance six inches every way. Carnations and picotees: regulate the number of buds, and tie up the advanced ones, as directed for pinks, only that, when you have tied them, you may tear down the calyx from the top to the tie, and thus release the petals all round alike: the shoots at the bottom may be layered, if they are long enough to bend down under the soil, or pulled off and piped like pinks, if they are short; only they must be struck with a slight bottom-heat under a hand-glass, instead of in the cold, open ground. Chrysanthemums, the most untidy of all our flowers, can be grown dwarf by taking off cuttings now, and striking them in bottom-heat; they will soon root, and should be then potted off into pots, size 48, and placed in an open situation where they will have all the sun. The old roots may be planted in the ground to grow for young stock, and flower, if they will, in the borders. Those growing in pots must be shifted, as the roots fill their pots, and be stopped for the last time at the end of the month, or the beginning of the next. Auriculas must be protected from very heavy falls of rain, and the drainings of the pots occasionally examined; dead leaves must be removed. Annuals sown late must be thinned if too thick, and the plants pulled out may be planted anywhere. Pinks, polyanthuses, carnations, picotees, may be planted out, or potted off from the seed-pans or beds. Perennials of all kinds may be planted out or potted, as the case may be, from seed-pans or seed-beds.

Fruit Garden.—Make new strawberry beds of the strongest runners. Stone-fruit trees may now be budded in the same way as roses. Proper stocks may be had at the nurseries, or be raised from stones. Trained fruit trees should have useless shoots removed. Vines require the same continued management as before directed; rubbing off useless shoots, nailing up all those that are useful, cleaning them of vermin, and still thinning the grapes. All fruit bushes and trees should have their useless spindling growth cut out, currant and gooseberry trees especially, whose fruit ought to be thinned, so as to give the remainder the whole of the nourishment of the tree. For exhibition, they ought to be four inches apart on the strongest branches before they are larger than peas.

Kitchen Garden.—Put sticks to scarlet beans, or give them some other means of support, if not already done. Earth potatoes up well to cover the tubers, and give them room to swell. Plant Chapman's new kidney, to supply new potatoes all the winter and spring, from taking-up time in October and November till May. Lettuce, radish (the turnip kind), and salads of all sorts: continue to sow enough to meet the consumption. Cucumbers and melons: train the shoots along the surface, so as to be out of each other's way; give the fruit room, and water must be administered: give melons but little water. Plant a main crop of celery, in trenches a foot to a foot and a half wide, and a foot deep, four feet apart from centre to centre. All kinds of winter greens, brocoli, savoys, &c., should be planted after dripping weather. Winter spinach: sow according to your wants. Top beans in flower, and earth up others. Sow peas once in three weeks, as long you wish to chance a crop. Turnips may be sown after rain. Leeks: transplant some nine inches apart in rows, if not done already: they are the better for earthing up.

SAVING, SPENDING, GIVING, TAKING, LENDING, BORROWING, AND BEQUEATHING MONEY.*

It needs no demonstration that the *saving* of money is as essential as getting, for the attainment of a permanent independence. This is one of those self-evident truths that meet with a ready and a universal assent. It is even a truism that it is as physically impossible for money to accumulate without saving, as for a leaking vessel to hold water. There is no income so large that cannot be got rid of, and no sum so small that an able-bodied, industrious man may earn in this country, that will not suffice, so long as he remain single, to lay the foundation of an independent fortune. A young man who can earn a dollar a day has but to resolve to save a portion of what he earns towards capital to start business upon, and the difficulty is already half overcome. A capital acquired in this way is generally lasting, while capital acquired by loan or inheritance is too frequently lost. The industry and efforts, used in acquiring capital train to habits of business, which, as we have before shown, are necessary to success, and without which training, business is most apt to fail. In looking abroad, too, we generally see those who commence life by their own personal efforts, and by such efforts *start themselves* in the world, are the most successful.

But a man has only the right to commence the work of saving after all his just debts are paid; and *all* his debts are not merely those of which the evidence is a note, or a bond, or a mortgage, or a book account. If he is the head of a family, he is under obligations to his family which he must discharge. As a member of society, and one of the great family of man, he owes debts of brotherhood to those whom misfortune has visited, of which he must pay his proportion. Charity is not merely a politic virtue, in the exercise of which he may reap an inward satisfaction, but in the neglect of which he incurs no guilt. Charity is a solemn *debt*, which no one can fail to pay without moral bankruptcy. It is a debt so binding in its nature that physical impossibility to have the means to discharge it is the only sufficient excuse.

The totally different rules and principles that apply to the *getting* and to the *using* of money, are the rock on which theorists split. The distinction is one that they do not seem to perceive clearly. They pour out the vials of their indignation on the getting of money, when it should fall upon the improper use of money. They at one time contend that a man should not devote more of his time to the acquisition of property than will barely suffice for his wants, and then argue for an amount of charity that he could not possibly be able to give without unremitted industry.

But there is a question of equal difficulty, and perhaps of greater practical importance, which honest men encounter, and that is, how can contributions be given so as to effect the greatest good. This is best left to every individual's discretion, every one remembering that nothing good can be achieved without labour and attention, and that he must not trust to others nor altogether to rules which are only intended to help discretion, not to be its substitute, as a means of superseding the exercise of these qualities even in the distribution of charity. One fact seems fully established by large experience, which is, that fixed sums appropriated to any particular species of charity—such as to maintain the poor, to feed and clothe orphans, to rear foundlings, &c., generate the evils they are intended to cure. Men are made careless of providing for the future when they know that they will always be able to find a refuge in the workhouse, or they will marry regardless of what is to become of their offspring, if other persons have made provision for rearing and educating foundlings and orphans. The principle that each pair of parents are morally bound to provide for the welfare of their offspring is set at nought by such a provision. The task is taken out of their hands when charitable establishments for such a purpose become numerous. It ought to be remembered, that though founded by property bequeathed, all such institutions are really maintained by the industry of each living generation, and that, consequently, a great multitude of charities have the double effect of tempting individuals from the performance of their duties, and, at the same time, of making the performance more difficult. The tasks of the poor labourer are increased in order that the rich may appear generous, while his moral instincts are misdirected. The question, therefore, how men can apply their charitable contributions in the best manner must be left to the discretion of every individual; but he is bound to exercise discretion in giving, as well as in getting and in saving.

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*From "Money: how to Get, how to Keep, and how to Use it." In connexion with this article we recommend the perusal of "How a Penny became a Thousand Pounds," price 1/6, just published by Houlston & Wright.

There are many reasons for saving when a man has the power and has paid all his just debts. Every one is liable to illness and misfortune. For all the night cometh when no man can work. Everywhere, and at all seasons, there are rainy or stormy days, when he who has made no provision for them must be hungry or in want. A married man may save, for the sake of his family; an unmarried man for the sake of getting married. Children cannot provide for themselves, and though it does not seem prudent to provide too well for children, for that too often makes them idle and worthless to others and themselves, they are all the better for receiving a good station in the world and having a good outfit to begin with, which can, in general, only be done by the saving of parents.

To perform a man's part well in life, he must not always be under the goad of necessity. He must to some extent, plan his existence, or have it planned for him, which is done when a youth is bound an apprentice or enters a profession; and he must, at the same time whether it be in subordination to that plan, or in subversion of it, when he changes his pursuits, guide his conduct by circumstances from day to day. In society, immediate necessity arises rather from the respect we have for the opinions of one another than from physical wants; and a man who always has his living to seek is thus dependent on his fellows, and cannot plan his existence for himself. He is the servant of his brothers. It is plain, from the money of the world being very small in amount, compared to the property in the world, and from the bulk of the property in the world being annually created and annually consumed, that property is rather an immaterial than a material or physical relation. Material wealth cannot be saved with advantage; for iron rusts, provisions moulder, cloth becomes a prey to the moth, buildings fall swiftly to ruin unless carefully looked after; what is at all times really saved is power—power over other men by whose labour the material wealth saved is made profitable. Land, too, supplies man with little but timber, which is in his way till he has obtained plenty of bread; or brambles, which only excite additional industry, and make more labour necessary to obtain food. What men really save, therefore, and bequeath, is power to obtain the services of other men, represented by the possession of land, houses, food, clothing, money, &c. &c.

On this view, the saving which ends in amassing a large fortune, another name for accumulating power, is not very desirable. In a public point of view it is known to be of no advantage, except as every kind of waste, destruction, and unnecessary consumption is to be avoided,—because what the saving man does not consume, another does. He puts his money out at interest—he lends all his spare produce, and those who consume it pay him for the use or the enjoyment. In a private point of view saving means privation, self-denial, or probably excessive and over-labour in order to save. It means, therefore, a refusal of natural and healthful enjoyment, and is otherwise of no advantage to the saving man. He cannot carry his riches with him, and in most cases he leaves them to be squandered by his heirs. Some persons form expectations of getting his accumulated wealth, or are bred up in the expectation of receiving it, and the expectation deadens exertion, encourages idleness and false hopes, engenders the formation of bad habits, and in the great majority of cases renders the expectant an unhappy man as long as he lives.

We see continually the eldest sons of great judges, great physicians, great generals, great admirals, and sometimes of great merchants and manufacturers, who pass an idle, worthless, and miserable existence, because their fathers toiled and saved to make large fortunes for them. Hope is the balm of life, the stimulus to exertion, and it inflicts a terrible injury on a youth, so to provide for him as to leave him no rational object of hope to excite generous exertions. A born king removed from all competition, who has no hopes, and is deprived of every rational motive of existence, is a miserable man. No one is more happy than he who is continually occupied by some honourable and hopeful pursuit; and as the bulk of honourable pursuits have for their object the getting money, as the almost universal measure of and reward for exertion; so to enrich a youth as to deprive him altogether of a natural and rational motive for exertion, is to make him in general a very miserable man. Saving, therefore, to accumulate a large fortune, in order to found a family, as it is called, is not a good, but an evil—not a virtue, but a vice. One man shortens his life by privations and anxious toil, to shorten the life of another by idleness and dissipation.

To obtain power over other men, and exact services from them, has universally and at all times been considered of great advantage; and slavery, with all its concomitant and attendant horrors, has been carried into effect for that purpose, and for that purpose only. As modern laws and institutions, particularly all those concerning property, had their origin in a state of society when slavery prevailed—the broad acres of a feudal baron, carrying with them a power to exact the labour or the property of all the serfs on them; and this power over land being the basis of our laws concerning property, it is a consideration of some importance in saving, not so to save as to perpetuate and strengthen the slavery from evils still existing. Great accumulations under this aspect are merely great gatherings of power in individual hands, over other men. A parent saves to give that power to his children; if it be excessive it exposes them more or less to the inconveniences which have always attended on slavery. They are either masters, like the eldest sons, or poor and dependent like the younger, or like the daughters. A man should not, therefore, save so as to increase the evil. The power he accumulates in the hands of one, is power over his other successors. To save under a legal dispensation, which directs the accumulation into the hands of one, is to make him arrogant and careless, and to make others submissive, dependent, and obsequious. Saving, therefore, may be injurious to affection and to morality. The man who neglects the amenities and kindlinesses of family life, or of the friendly circle, merely to labour continually that he may heap up wealth, saves by injurious means and for injurious purposes.

The contrast to the power of one to extort the labour of others is the free exchange of mutual services. That is the rule of modern society, as contradistinguished from the ancient rule, and its power is extending; it pervades society more and more every day, and will henceforward regulate the saving as well as the getting money. We must save as well as get, with the knowledge present to our minds, that other men are getting and saving, and we must emulate one another in saving as well as getting. We must not so save as to interfere with the free exchange of services: but as all large accumulations do interfere with that moderate saving which tends to an equal diffusion of power, savings by the poor whenever possible, that they may not be dependent, saving by the middle classes, that they may divide and distribute the large power of the very rich, is much to be applauded. The classes who have most need of saving are the least able to save. The most destitute are the most dependent; the most enthralled can barely exist, and can save nothing. Hence the condition of the lower orders throughout Europe has been only very little improved since the time when serfdom was generally prevalent. The improvement has been in escaping from amongst them. From age to age they have been able to save nothing; and from age to age the master class, and those who have gradually shared their power, have saved and accumulated, and have continued the poverty and serfage of the multitude. Though some persons of very high authority, and the present Chancellor of the Exchequer, have said that the rich classes become continually richer, and the poor continually poorer; yet the fact is, that the very poor and the very rich have proportionally decreased in numbers since the extinction of serfdom, and a very numerous middle class has grown up. It is now fast increasing. Probably the future increase in population will be chiefly of the middle classes. All the new wealth found in California and Australia is obviously obtained by mere manual labour, which in consequence, and in consequence of a greater demand for it, is everywhere becoming better rewarded. Perhaps it will no longer be very difficult for the great multitude to save. It must be noticed, too, that almost all manual labour is conjoined with some kind of skill; that every labourer is to that extent a capitalist, and skill being almost universally and pretty equally diffused, wealth will be so too. The companionship of skill tends to ennoble and enrich labour, and the process of converting a larger and a larger proportion of society into middle classes is now very conspicuous. As less difficulty is found in obtaining subsistence, as families are more easily provided for, as the chances become fewer that a man will fall into a condition of dependent serfage, the motives for great accumulations, which formerly existed, will be lessened, and power or property be more equally diffused. As the aristocratic distinctions of society lessen, the motives cease for founding aristocratic families; and moderate, and therefore enlightened, saving must take the place of the selfish, unintelligent hoarding which has always prevailed in conjunction with rapacity, insecurity, and fraud.

Of spending money what can be said, but that it should be something less than a man's means, and in conformity to his tastes? Every individual is so different from every other, that it is a very rare thing to find any two exactly alike. This variety of form is accompanied by an equal variety of taste, though the deference and respect we have for one another tend to reduce all to one common and mutual standard. This becomes the measure of a man's expenditure. His house, his dress, his pursuits, are in conformity to social usages, and to those of the class to which he belongs. He must so regulate his expenditure as not to sink below his fellows, but emulously rise above them. To command respect, is one great object of every man's life; and every man, as the rule, clothes himself and houses himself, which is something visible to others, rather better and more carefully than he habitually feeds himself. More than fortune—health, comfort, and happiness are very generally sacrificed to the opinion of the world. Men buy show things, and go about to show-places to keep up a fashionable appearance, while they deny themselves and their families those comforts and conveniences, though necessary to health, which concern only the individuals, and which the world are never called on to admire. "Let thy garment be as costly as thy purse can buy"—excellent advice—was founded on this principle, when men were distinguished by a luxury of dress, that is now lost in a universal and comfortable plainness. Still the dress of women is distinguished by its costliness, and very often by its untidyness and uncomfortableness, and much is sacrificed to appearance in dress. To preserve in health and strength all the members of a family, the art and science of which ought to be much more studied than they are, should be the first principle of all expenditure; then to obtain comforts and ease, and then to command respect by a good appearance. Frugality, order, and method, which make the sixpence of the prudent housewife of as much value as the shilling of the careless one, are the means for obtaining all the ends of expenditure. All getting of money is in truth for the sake of expending it, and quite as much care, attention, and even genius are required to spend money to advantage as to get it. To gather money by great diligence and exertion, and to be careless or profuse in squandering it, is to forget in the means the end for which all labour is begun. Expenditure seems much more regulated by custom than exertion; and changes in modes of living seem to follow at a distance the changes in modes of exertion and getting money. Expenditure is regulated less by individual taste than by class habits, and it becomes those who acquire wealth by honourable exertions, the leaders of society, to deliberate carefully on the modes in which they expend it. Following rather a reasonable than a customary course, they should direct expenditure to secure health, to give ease, and to command respect.

Of giving money there is little to be said. It is a gift of services which only the generous and the strong will make. To be enabled to give money is, however, very often a motive for getting it; and it is not unfrequently got by improper means in order to be given away. Men are proud of being generous, and Turpin's generosity gilded his robberies. What a man honestly gets he may freely dispose of; and each man in giving away his superfluity must consult his own heart, his condition in society, and the wants of his neighbours. To give an arboretum to a town, as Mr. Strutt gave one to Derby; to plant a tree and to conduct a stream to the road-side, and give them to the thirsty traveller for convenient shade and drink, are praiseworthy gifts; but many of the ostentatious gifts of the opulent to the poor, such as gifts to paupers and foundlings, only serve to perpetuate some disease or some vice they are intended to relieve.

Borrowing and lending money is borrowing and lending services, which is an essential part of social life. Borrowing and lending are not, therefore, to be indiscriminately condemned. The borrowing must always take place with a reasonable hope of repayment, and for the purpose of accomplishing some good object. To borrow merely to squander—to borrow in order to indulge in low vices—to borrow without a reasonable hope of having the means to pay, is to receive services from others and return none; is to be useless or mischievous, and deserving reprobation. Carried out extensively, it would soon extinguish society, and only in a very small degree is it, or can it ever, be tolerated. It is a palpable and injurious vice, and like other vices is repressed by opinion. But to borrow services in order to execute some great or good work, which will enable the borrower to repay with interest all that he borrows, is a great means of men serving one another; it calls into existence many mutual services that otherwise could not exist; and such lending and borrowing is equally and especially advantageous to both lenders and borrowers. All that is necessary to say of such lending and borrowing is that it must be judicious on both sides. For borrowing and lending by individuals we can give no other rule; to serve a friend—to help a neighbour—to assist the needy and the industrious, are all kindly acts, which, when done in a right spirit, are sure to be rewarded, though the money may never be repaid.

Bequeathing money is bequeathing power. In many, perhaps the majority of cases, a man loses the power actively to manage his property before his death. As he becomes aged, he becomes infirm and dependent. To give up all, like Lear, and trust to children, is not wise, but to give up property during life to those who are to have it after death, and who (most probably) manage it before death, seems wiser than to bequeath it. The voice from the tomb is not so impressive as the counsel of the living man who has yet something in his power, and the aged may more advantageously guide or influence the young than the departed. A gradual and reasonable distribution of an accumulated property before death is to be recommended. When that is not done, and for all that remains when it is done—as no general law for the distribution of property, whether the rule be to divide it equally between all the children, or, when there are no children, between all the collateral relatives of a deceased, or to give a large portion to a widow, or to an eldest son, or to the youngest son, can never meet the requirements of individual cases—the property should be bequeathed by will. To provide, as far as possible, for the helpless, should be kept most prominently in view: to give something to the needy and the industrious, should next be considered; and the very last thing that should be thought of is to add to the riches of the rich. Superior to all these considerations, however, is the fact that almost every man is surrounded by those who have already shared in his wealth, and who perhaps have assisted to bring or keep it together, and who have been bred up to expect a large share of it; in distributing it these are first to be thought of, and amongst them the most helpless, the most needy, the most careful, should be especial objects of consideration. Each individual case, however, has its own peculiarities, which are at least as various as the height, forms, and shades of colour in individuals, and each can only be judiciously treated by the exercise of discretion. No rules can supply its place, or exonerate individuals from the duty of considering and deciding for themselves; and no general habit is probably more pernicious than that of supposing that rules can be the substitute for discretion, and of following them to the disregard of the peculiar circumstances on which alone can be formed any and every sound judgment. The main object of all law is not to define but protect rights, and amongst the rights it has to protect the right of property is second in importance only to the right of life "Thou shalt not murder," "and thou shalt not steal," are promulgated with equal authority and equal strictness. The right of property implies the right to dispose of it, and consequently all regulations to dispose of the property of individuals in any peculiar manner are infringements on the right of property, which the state is organised to protect. They are all indefensible. Individuals should dispose of their own property, but it will remain for the legislator to determine how far he will enforce testamentary dispositions that can only be carried out by his authority. Get money industriously, reader, spend it methodically, and you will live happy, and bequeath wealth and a good example to posterity.

ENTERTAINING BOOKS.

THE age in which we live abounds with entertaining books. Stories of every description, some of them containing good moral lessons, are exceedingly numerous. Those of the better class furnish food for fancy and feeling.

Fiction has its peculiar attractions, and so has truth. Imagination can scarcely devise more strange events, more striking characters, or more romantic results, than occur on the pages of history. The entertainment derived from true books is the most valuable because it is the most worthy of being remembered. The mind rests upon it with satisfaction. It accords with its native tastes. The child, as soon as it can speak, says, "Please to tell me a *true* story." Those who are most familiar with unfolding infancy, agree, that incidents simplified from the Scriptures, delight it, though they may frequently be repeated.

So, from the great storehouse of history, the young may entertain and enrich themselves at the same time. By extending their acquaintance through past ages and distant nations, the powers of thought expand themselves, an acquaintance with illustrious characters is formed, and knowledge gained which will be profitable through life, both for reflection and conversation.

Some have objected, that a wide range of history may give the young mind a premature introduction to the vices and follies that disgrace mankind. Yet thus to study them on the map of man, and to form a correct opinion of good and evil, and to deepen the love of virtue, and the hatred of vice, by the force of selected examples, might prepare the young better to understand character, and to resist temptation in the actual struggle of life. The entertainments of history may be as safe as those of fiction, and more salutary. If they sometimes reveal the whirlpools of ambition, or the abysses of cruelty, they change the scene, and present the quiet waters of peace fertilising the valleys, and the pure rose of virtue blooming in the wilderness. Examples of true greatness, generosity, and piety, if less frequent than those of an opposite nature, borrow force from contrast, and may therefore make a deeper impression, and thereby awaken a stronger desire of imitation.

The entertainments of history aid in acquiring a knowledge of human nature. We there see what man has been from the beginning, and what motives or temptations have moved him to good or to evil. Great care should be taken to form a correct judgment, and to measure by a true standard of excellence those whom the world has called illustrious.

Especially should opinions be cautiously formed of those whose fame rests only upon military exploits. Though the pride, cruelty, and revenge that stain many of those now applauded as heroes, are in a measure palliated because they were heathen, still *we* are bound to judge of right and wrong as Christians. When we think of the misery, mourning, and death that marked their course upon the earth, we cannot but wonder by what rule of equity "*one* murderer should make a *villain*, and *many a hero!*"

To purchase a single conquest, how many eyes have wept, how many bosoms been pierced, how many hearts broken! If victories, and triumphs, and trophies dazzle the eye, look at their dark reverse; torrents of blood flowing, widows and orphans plunged in despair, throngs of unprepared souls driven into the presence of their Maker.

The patriotism that dares danger for the preservation of liberty, the firmness that repels the encroachments of tyranny, the courage that protects those whose lives are entrusted to its care, differ from the ambition that is willing to build its glory on contention, suffering, and death. This spirit is at war with His precepts, at whose birth the harps of angels breathed the song of "Peace on earth, and good-will to men."

History may be read by the young with a resolution of transcribing into their own character whatever it exhibits that is "just, lovely, and of good report." Thus will its pages not only afford rational entertainment, but be subservient to usefulness and piety in this life, and to the happiness of that which is to come.

OLD CHINA.

Among the ornaments and decorations of our modern apartments, old porcelain forms a very prominent feature. The activity shown in the pursuit of a rare piece of china, and the extraordinary price which has been frequently paid for it, are striking indications of the prevailing taste; and there is a certain degree of reputation attached to the possessor of a good collection, which is highly stimulating.

Of all the pursuits of fashion, this is one of the most innocent. We have had frequent occasions to admire the female taste and judgment displayed in the selection, and we have listened to many an elegant dissertation from the sweetest lips in the world, on the beauties of a mutilated jar, until we have felt the incipient mania. Then have we pryed into every broker's store in each dirty avenue of the metropolis, in the hope of forming a collection suited to the dimensions of our apartment, and purchased with painful reference to the state of our exchequer.

The proficiency of the Chinese in the chief branch of their manufactures, the state of their fine arts, and even the religious opinions of the people, may be collected from their porcelain. In the numerous private cabinets of this metropolis are specimens of the most precious kinds of porcelain, for which the Chinese have been long pre-eminent, and the manufactories of our own country experience the benefit of these models. With the advantages of more correct principles of design, the knowledge of perspective, and of the harmony of colours, we are only deficient in understanding the mixture of the materials, and the plastic part, to rival the productions of Eastern Asia in this line. The former may be made good to us by our *superior* chemical science, the latter will no doubt be acquired by patience and care. Every one therefore must applaud the curiosity which leads to forming such collections, and must cease to wonder at the high price at which objects of such beauty and importance have been estimated.

The kind of porcelain chiefly prized is termed Mandarin or Egg-shell. It displays the greatest ingenuity in the fabric; its characteristic is extreme delicacy, and the objects on it are of the most exquisite pencilling and enamel. The marks, however, by which the Mandarin porcelain may be known are not decidedly agreed on. Some persons have ventured to recommend it by the thinness and transparency of the material; others by the contrast of some rich colour on the outside with a green verditer within; others again only, and perhaps with juster reason, on the quadrangular cluster of characters inscribed on the bottoms of the vessels. These groups, it is believed, are the most ancient characters of China, changed from their hieroglyphical to a quadrate form, and are used as a court character. The inscription records the dynasty and emperor under which the specific piece of porcelain was made.

The *Crackle China* is admired for the cracks observable in the varnish, which, it is believed, are occasioned by the vase being suddenly exposed to a cool draught of air, while the varnish is yet warm.

The more thick *Enamel China* is less to be admired for its earth and painting, than for the freedom with which aquatic and other plants are designed on it, for the richness of the colours laid on in varnish, and the curious symbols with which it is embellished.

The *Burnt-in China* is considered of inferior quality; but this mode of colouring gives admirable richness and effect when introduced on the genuine specimens of the old Japan, which is of massive manufacture, and admired for its weight.

The *Old Japan*, properly so called, combines almost every quality that is separately admired in the porcelain of China. The broad flowers depicted on it are displayed in blue and red, burnt in, with the addition of a little enamel. But what chiefly gives richness to these specimens, is the bold relief in which some of the flowers are executed, and afterwards gilt and burnished.

The Chinese have discovered a fertile source for the embellishments of these different kinds, in the fables of their religion; and, it is remarkable that, like the Greeks, they have chosen their earthenware to commemorate their most secret doctrines.

A Chinese Emperor is said to have observed that the dragons on his crest were designed for more than mere ornament. They had a moral signification. We may affirm that many subjects depicted on porcelain have a recondite meaning. The operation of the elements on each other, to produce the first created universe, according to the *material* notions of the Gentiles, seems to be expressed by the combinations of the *fiery* dragon with the *Fung Hoang*, or bird of Paradise, expressive of Air; the *Ky-lin*, or horned dog, perhaps denoting Earth; and the tortoise-fish, or the lotus, which indifferently imply Water.

Fohi, the ancient founder of the

Chinese Empire (coeval with Noah) is reported to have seen a tortoise issue from the water, bearing on its back a mystical diagram; and on this account we find a tortoise-shell pattern adopted on china as a border, having open compartments in which flowers are painted and enamelled in natural colours. Hence, the date of this appearance to Fohi being considered, we conclude the combined emblem denotes the vegetable creation arising from water. But the forms, as well as the paintings of porcelain, are of mythological import; and the hexagon seems to have been generally preferred, from its representing the natural vein or mark in the shell of the sacred tortoise. We collect from Bayer that Fohi appointed eight Tchin or spirits—they are probably no more than the eight persons preserved at the general destruction of mankind, with which Fohi must have been coeval, but which he and a few others survived. These persons may be seen on bowls, plates, &c., standing on water, generally supported on a fish or aquatic animal, and are thus distinguished:—

1. How-cing-koe, a female with a landing net.
2. Hong-chong-lie, a boy with a flute.
3. Lit-hit-quay, a man with a crutch and double gourd.
4. Tong-fong-sok, a man with a fan and the fruit of immortality.
5. Schow-lak-how, a man with rattles or castanets.
6. Lut-hong ban, a man with a sword and cowtail.
7. Tchung-colao, a man with a bamboo tube and pencils.
8. La-mi-tsui-woo, a youth or female with a basket of flowers.

The implements depicted on Enamel China are the symbols of these divinities, and the fruit borne by the fourth person has suggested the form of many vessels in porcelain. Were a Chinese to present liquor in a vessel so shaped, it might be deemed a flattering mode of salutation.

We find a ninth person, superior to these, who may, perhaps, represent the material heaven; he is almost invariably seated; he rides on the stork, a bird of supposed longevity; he is bald and aged, and he carries a sceptre. He seems to be the *ancient one*—a title well known in the Egyptian, Scythian, and Greek mythologies, as Pi-apas, and Jupiter Pappæus.

THE MAN WHO NURSES THE BABY.

LITTLE children, lonely little ones, white-souled buds of existence, fair dovelets of heaven's own empyrean: happy the man of the world who, turning his back on scenes of heartless frivolity and falsely alluring pleasure, seeks his dearest enjoyments among them, in their purifying association, for "of such is the kingdom of heaven."

Would, for the sake of you, my dear reader, I were endowed with a pencil embodying the delicate grace of Coreggio, and a palette spread with the magic tints of Titian, that I might worthily pourtray the excellences and virtues of this noblest and most admirable of his kind, the man who nurses the baby.

"Who is he?" demands a fair damsel, in dulcet accents.

Oh, that must remain a secret, for a modest person is the one in question; but a little patience, and I will enlighten you as far as the bounds of prudence admit of enlightenment.

Paying a visit the other afternoon to a friend who resides *somewhere* in the precincts of ———, I, after sojourning for a brief interval in the drawing-room, was invited by the lady of the mansion up to her boudoir, which, entering rather unexpectedly, the first object my gaze lit upon was the lord of the household, ensconced very comfortably on a low couch by the fire, with the baby on his lap, and wearing, meanwhile, an air the most placid and matronly in the world.

"Ah, this is pretty employment for *you*, Mr. H———, is it not?" quoth I, derisively.

"Yes, indeed," chimed in his wife; "he always *will* take the baby when he comes home from the city."

But while her *nonchalant* tones seemed to convey the impression that she but lightly appreciated the treasure of a husband she possessed, it was easy to discover from her beaming eye and self-gratulatory manner, that she considered him a very model of men—a pattern for extensive imitation.

The man who nurses the baby, in utter scorn of my continued raillery, only the more fondly caressed the magnificent little fellow, and, sweeping his eyes proudly over a circle of as lovely home-flowers as need to grace a fireside, from the blythesome small maiden just hovering over the verge of her teens, down to the ringletted, frolicksome fairy of some three summers, who, nestling close to her mother's side, darted at me, from her violet peepers, shy, curious glances, smiled his reply—a mute response far more eloquent than words.

Little children are the keenest physiognomists imaginable, for they have an infallible instinct which teaches them whom to approach or avoid, and to distinguish, almost at first sight, a kindly and sincere nature from a morose and ungenial one. To the meek simplicity of a little child must return the haughtiest and loftiest spirit of man, ere it may become meet for the kingdom of God. The man who loves children, and is successful in winning their trust and affection, still catches through the clouds and darkening shades of perturbed life, bright glimpses of

> "The heaven that lay about him in his infancy;"

and yet folds closely above his heart, even amidst the toils and tatters of his out-grown innocence, a small remnant of that glittering raiment of immaculate purity which robed the soul of the first infant when cradled, a tender nursling, in mother Eve's arm.

"Umph! I wonder whether father Adam ever nursed the baby?" methinks I hear muttered in tones of deep incredulous bass.

What a question! Why, my good sir, of course he did; and a beautiful sight it must have been to have seen that first family together. We will imagine a scene in that era; a bower, gorgeously draped with a profusion of fragrant blossoming vines, and furnished with an enamelled and flower broidered carpet of luxurious velvet grass. Inside behold the majestic pair; Adam, reposing after the toils of the day, with the infant Abel in his arms, and graceful Eve kneeling beside him, playfully waving, just beyond the tiny grasp of the smiling little one, a bunch of rich, luscious, purple grapes. Not far off flows a picturesque river, and, straying on its gently sloping margin, may be seen young Cain, with curling locks and sunny brow, as yet unfurrowed with the scowl of unhallowed passions, gathering for his baby brother a nosegay of the superb lilies and other rare flowers that fringe it. The melodious ripple of the stream mingles faintly with the sweet glee of Abel as he welcomes, with a glad shout, the returning steps of his playmate. Sweet and placid picture!

Now, the creeping shades of evening, and the dews spangling each leaf and blossom, warn the sacred group that it is time to prepare for slumber. Philomel commences her vesperian hymn, and Adam, the baby *still* in his bosom, offers up his accustomed sacrifice of prayer and adoration to the Preserver of his happiness, the bestower of his wife and babes. That radiant band of angels, who have been bending with looks of love and admiration over the scene, now, ere their immortal eyes vanish from among the myriads of silver stars, pronounce a fervent Amen.

Let not for a moment be harboured the idea that my friend, the man who nurses the baby, is an effeminate or weak-minded individual! No! Nothing could be farther from the truth. Dignified in appearance is he, of portly and courteous mien, in tastes refined, and, withal, with a mercantile reputation that speaks well on 'Change.

Miss Bremer affirms that at no other time does a gentleman appear to such advantage as when presiding patriarchally in the bosom of his family. Certain it is, that a large majority of the more fascinating gentlemen one meets in society, are men of family. The man who reserves his sour moods for home—who hoards up the spleen, which he dared not wreak on strangers, for the domestic circle—who slams the front door till the whole house quivers—who snatches off his beaver, and tears off his coat with a growl, and bounces into the room with a sharp snarl—who tosses poor Pussy off her comfortable cushion for sheer spite, and kicks Ponto till he fairly yells with pain; but, oh! oh! especially the man who *never* nurses the baby, is prepared to perpetrate any enormity whatever, and should be banished, with hue and cry, from the society of humanised beings. Mark him well; he is ripe for "treason, stratagems, and spoils; let no such man be trusted."

Therefore, all hail to my friend! the man who nurses the baby, and does it, too, with such irresistible elegance! may he continue to flourish, until his crown blossoms like the almond tree. Much astonished will he be, in sooth, when, seizing on his favourite paper, he finds himself and his modest merits immortalised in its delightful columns. But let him not blush, for right fortunate may he esteem himself, if, during the progress of life he earn no less honourable cognomen than this, *the Man who nurses the Baby!* A. B.

THE CANARY BIRD.

The Canary birds now kept and reared throughout the whole of Europe were originally natives of the Canary Islands. There they are still found in pleasant valleys, and on the delightful banks of sparkling rills and small streams. But for some two hundred years they have been bred in Europe.

About the beginning of the sixteenth century a ship was wrecked on the coast of Italy, which, in addition to merchandise, had a multitude of canaries on board. These birds, thus obtaining their liberty, flew to the Island of Elba, the nearest land. There they found a propitious climate, and multiplied very rapidly. Had not man interposed, by hunting them for cage birds, until they were entirely extirpated, they would probably have naturalised themselves there.

In Italy were found the first tame canaries, and there they are still raised in vast numbers. Within the last hundred years they were so uncommon and expensive, that only princes and people of great wealth could keep them. But at the present day these birds are raised in all our cities, and most of the towns, and sold at moderate prices.

In its native island the plumage of the canary bird is said to be more beautiful than that of our tame ones; but its song is less melodious and varied, consisting of fewer notes, and uttered at longer intervals. The original colour of this bird in its wild state was grey, merging into green beneath; but by domestication and climate it has been so changed that canaries may now be seen of almost every hue.

Most commonly they are of some shade of yellow; but some are grey, others white; some are reddish brown, or chestnut-coloured, others are beautifully shaded with green. These are the prevailing colours, but they are blended in various combinations, and thus present every degree of shade. Those the most prized exhibit most marked and regularly these various shades

The one most generally admired, at present, is yellow, or white upon its body, and of a dun, yellow colour on the wings, head, and tail. Next in degree of beauty is that which is of a golden yellow, with black, blue, or blackish-grey head, and similar wings and tail. There are also grey ones, with yellow heads, or with a ring about the neck; and white ones with a yellow breast, and white head and tail. Those which are more irregularly marked are less esteemed.

The canary bird is five inches in length, of which the tail comprises two inches and a quarter. Sometimes the female is not easily distinguished from the male; but the latter has generally deeper and brighter colours, the head is rather thicker, the body is more slender throughout, and the temples and space around the eyes are always of a brighter yellow than the rest of the body.

In selecting a bird, those are best which stand upright on the perch, appear bold, and lively, and are not frightened at every noise they hear, or everything they see. If its eyes are bright and cheerful, it is a sign of health; but if it keeps its head under the wing, it is drooping and sickly.

Its song should also be particularly noticed, for there is much difference in this respect. But as it often depends on the peculiar taste of the purchaser, no directions can be given for its application. In respect to the notes of these birds, there is much difference. Some of them have very fine notes; but if the song is not fine they can be educated, by being placed with another, which is a good singer.

They catch the tones of other kindred songsters with considerable facility; hence, among the best singers there is a material difference in the song, which depends mainly on the bird with which they have been educated. In some countries the nightingale is employed as a master musician to a whole flock of canaries; and it is this which gives some foreign birds a different tone of voice from those bred in this country.

In teaching the canary bird to sing, it is usual to take him from his comrades, and place him in a cage alone. This is covered with a cloth, when a short, simple air is whistled to him, or played on a flute, or a small organ. In this manner, by repeating the tune five or six times each day, especially mornings and evenings, he will learn to sing it. But it will frequently require five or six months before he will retain the whole tune.

Canary birds sometimes hatch their young every month in the year; but more commonly they breed only in the spring, summer, and fall months. After the young birds are hatched the old ones are fed with soft food, such as cabbage, lettuce, chickweed; also with eggs boiled hard, and minced very fine with some dried roll, or bread containing no salt, which has been soaked in water, and the water pressed out. Rape-seed, or the seed of the turnip, is much used for their food.

Up to the twelfth day the young birds remain almost naked, and require to be covered by the female but after the thirteenth they will feed themselves. When they are a month old they may be removed from the breeding cage.

It is a curious fact that, when two females are with one male in the same cage, and one female dies, the other, if she has not already sat, will hatch the eggs laid by her co-mate, and rear the young as her own.

PRESERVATION OF SIGHT.

Take care of your Eyes.—Most people may preserve good sight through their whole lives by taking care of it; and yet most people forfeit it by neglecting it. Among the rules for keeping the eyes sound and healthy the following are some of the most important:—

Avoid glaring lights; avoid abrupt, violent transitions from light to darkness, and from heat to cold, and *vice versa;* keep the eyes clean; wash them with lukewarm water. According to the old English proverb, "fasting spittle is good for sore eyes." Most animals heal their wounds by licking them with their tongues, for the saliva has great healing virtues; therefore, if you suffer from irritation of the eyes, moisten your finger with your saliva, and apply it gently to the eyes. But do not rub or press your eyes at all roughly unless you wish to injure them. Never allow dust or hairs to remain in your eyes; but if they get in, fill the eyes with lukewarm water, so as to set the encumbrance afloat, and gently draw your fingers across the eyes in the direction of the nose, until the offending substances slip out at the corners. Don't put poultices over your eyes, lest in attempting thus to draw out the inflammatory diseases, you draw out eyes and all. In order to preserve your eyesight preserve your general health by air, exercise, and temperance, and medicine when you require it. Accustom your eyes to moderate and varied exercise, but never strain them by too long persevering over a work which they are weary of. Weak eyes are more benefited by a green shade, or blue or green spectacles, or railway goggles (made of wire gauze) than by thick bandages. Avoid reading small print after dinner, especially if your dinner has been rather of the epicurean order. And do not read much by candle-light, nor sew black clothes, &c. As candles are apt to flare and produce an undulating glare, use a ground glass or oiled paper lamp instead. Avoid exposing your eyes to an artificial draught of air. Don't roast your eyes by sitting too much before a bright fire. If your usual position exposes one eye more than another to a glare of light, protect the exposed eye by a green shade. Use double eye-glasses when you require them, rather than single eye-glasses, or even spectacles, and take care that their focus precisely suits your own. Choose apartments that are well and evenly lighted. Accustom your eyes to the natural influence of the atmosphere and solar light; those who live in dark and close rooms will produce a morbid weakness of the optic nerves. Beware of strong reflected lights, especially those from white walls, chalk rocks, &c., for white hardly absorbs any ray, whereas the other colours absorb many. Accustom your eyes to view varied objects at near and remote distances, as by this means you will preserve their free play and flexibility; whereas if you direct your sight too exclusively to near objects you will become near-sighted, and *vice versa*. Let the coloured papers of your rooms be rather mild and soft than brilliant or garish. View objects in oblique lights so as to avoid their direct reflections, which often dazzle the eyes. The best colour for spectacles is pale blue. Do not let a glaring light fall on the paper while you read or write. Keep the eyes cool by temperance, and the feet warm by exercise. When the eyes are simply weak, a tonic wash, such as alum-water, or green tea and brandy-water, is beneficial. When irritable, use weak goulard water, and produce defluxion from the nose by taking snuffs.

THE BEGGAR.

A BEGGAR through the world am I—
From place to place I wander by.
Fill up my pilgrim's scrip for me,
For Christ's sweet sake and charity!

A little of thy steadfastness,
Rounded with leafy graceness,
Old oak, give me,—
That the world's blasts may round me blow,
And I yield gently to and fro,
While my stout-hearted trunk below
And firm-set roots unmoved be.

Some of thy stern, unyielding might,
Enduring still through day and night,
Rude tempest-shock and withering blight—
That I may keep at bay
The changeful April sky of change
And the strong tide of circumstance—
Give me, old granite gray.

Some of thy mournfulness serene—
Some of thy never-dying green,
Put in this scrip of mine,—
That griefs may fall like snow-flakes, light,
And deck me in a robe of white,
Ready to be an angel bright,—
O sweetly-mournful pine.

A little of thy merriment,
Of thy sparkling, light content,
Give me, my cheerful brook,—
That I may still be full of glee
And gladsomeness, where'er I be,
Though fickle fate hath prisoned me
In some neglected nook.

Ye have been very kind and good
To me since I've been in the wood;
Ye have gone nigh to fill my heart;
But good bye, kind friends, every one,
I've far to go ere set of sun;
Of all good things I would have part,
The day was high ere I could start,
And so my journey's scarce begun.

Heaven help me! how could I forget
To beg of thee, dear violet!
Some of thy modesty,
That flowers here as well, unseen,
As if before the world thou dst been,
O give, to strengthen me!

J. R. LOWELL.

ANOTHER INTERVIEW WITH DR. MUSPRATT.

Dr. Muspratt's Dictionary of Chemistry, applied to arts and manufactures, appears in monthly shilling parts. Whatever is discussed is discussed with remarkable completeness, the rationale of each process is very clearly given, and there is no stint of well-executed illustrative woodcuts. Dr. Muspratt proposes to himself that the seeker of information upon any subject included in the plan of his dictionary shall find in the work whatever he may chance to look for; and we have no doubt that he will so carry out his plan as to produce a book of standard value to the chemist and manufacturer.

That it is at the same time not without much interest even to the general reader who looks into it for information, we may show by quoting several brief and interesting passages.

Alcohol, &c.—The operations of a distillery relate to the extraction of the alcohol from various sorts of grain. Wheat, oats barley, rye, Indian corn, rice, and other of the graminæ, whether in the raw or in the malted state, as well as the juices of fruits, sugarcane, beetroot, potatos, carrots, and even some of the grasses, and many other vegetable and natural substances, eviscerate certain elements which, by peculiar processes, yield alcohol. Distillation is invariably one of these operations; but it is preceded by others which differ according to the nature of the ingredients employed. Those liquors universally known and abused, such as whiskey, hollands, gin, brandy, rum, spirit of wine, and cordials of various kinds, all contain alcohol, which passes over in the process of distillation. British brandy, British gin, whiskey, or rum, are produced from corn; French brandy, from wine; West India rum, from sugar or molasses. The different qualities of these various liquids depend partly on the centesimal amount of alcohol, partly on the berries, herbs, and seeds with which they are flavoured, partly on their mode of manufacture, and lastly, on the matters whence they are derived. In every case, however, the substance suffering the process of distillation is a sweet liquid, but the means whereby the saccharine material is instituted vary with circumstances. The extract produced from grain is converted into a kind of beer before being distilled. The fermented liquor, modified in a particular way, forms beer at the brewery; whilst in the distillery it is known under the name of wash, and is that liquid which undergoes, subsequently, the process of distillation. * * From scientific inquiries, the distillers and rectifiers of spirituous liquors have gathered a rich harvest of experience, inasmuch as they have been made better acquainted with the nature of their operations, and more qualified to procure artificially any beverage almost instantaneously. But many of this class, much to the detriment of their business character, pass by chemistry entirely; the consequence of which is, that in the fabrication of artificial liquors a most absurd course is often adopted, and mixtures used in favour of which there is neither the evidence of reason nor of common sense.

Beer.—A malt liquor of any kind, or a spirituous liquor made from any farinaceous grain, but generally from barley, which is first malted and ground, and its fermentable substance extracted by hot water. This extract or infusion is evaporated by boiling in caldrons, and hops, or some other plant of an agreeable bitterness, added. The liquor is then allowed to ferment in vats. It is of different degrees of strength, and is denominated small beer, ale, porter, brown stout, &c., according to the quantity and nature of its ingredients. Beer is a name given in America to fermenting liquors made of various other materials; and when a decoction of the roots of plants forms part of the composition, it is called spring beer, from the season in which it is made. There is also root beer. In Britain, the term beer is applied in the same way to fermented liquors made from ginger, spruce, and molasses, as well as to that procured from malt and hops. In the time of Tacitus, whose treatise on the manners of the Germans was written about the end of the first century of the Christian era, beer was their common drink. Pliny mentions it as being used in Spain, under the name of *cœlia* and *ceria;* and in Gaul, under that of *cerevisia;* he then proceeds to explain, that almost every species of corn has been used for the manufacturé of beer. In Europe it is usually made from barley; in India from rice; in the interior of Africa, according to Mungo Park, from the seeds of the *holcus spicatus,* spiked or eared wall-hardy. These observations are corroborated by other authors of antiquity; and the *cerevisia* of Pliny evidently takes its name from *Ceres,* the goddess of corn—lexicographers doubting whether it ought not to be written *cererisia.* Plautus more minutely calls it *Cerealis* liquor; that is, liquor used at the solemn feasts in honour of that goddess—the harvest home; and both he and Columella—a famous writer on agriculture, who flourished in the reign of Claudius, and whose work is therefore coeval with the invasion of Britain by that emperor—called this liquor *sythum,* which, if traced back to its Greek origin, is interpreted "drink from barley."

There is no department of the arts and manufactures where chemistry has exerted a more decided influence than in brewing. In a state of society like the present, when philosophy and enterprise travel with giant strides, and when every branch of technology calls aloud for scientific aid, exact theoretical information cannot be too widely diffused. Notwithstanding the trite saying which has existed from time immemorial, that any old woman can brew, it is worthy of remark that few old women, even in literature, are chemists, fewer chemists are brewers, and fewer still are the brewers who, by attention to chemical transformation, have been able to increase the quantity of the useful extract from malt, and to reject the errors, both in theory and in practice, that eventually reduce the labour of the old-woman brewer to futility and loss.

Many operative brewers, in some of the largest town establishments, even now ridicule and despise the idea of chemistry being in any way connected with the art of brewing. Such ignorant prejudices only perpetuate bigotry, and cause an enormous waste of property; the progress of useful art is impeded; and its promoters are ungenerously maligned by a spirit which knows not the limited range of its own capacity.

WATER.—Perhaps nothing in nature is more variable in character than this apparently simple fluid, which is not the *aqua pura* which it seems, and which many believe it to be, but a heterogeneous mixture of alkaline and metallic salts, acids, gases, and occasionally even animal and vegetable matter, some being held in chemical union, and others in mechanical suspension. Pure water, or *oxide of hydrogen,* is attainable only by art.

HOPS.—The medicinal properties of hops are numerous. The odorous emanations arising from them possess marked narcotic properties. Hence a pillow of the cones has often been prescribed to promote sleep, in cases where the administration of opium could not be effected, or would have been objectionable. Both infusion and tincture of hops are mild and agreeable aromatic tonics. They sometimes manifest diuretic, or, when the skin is kept warm, sudorific qualities. Their sedative, soporific, and anodyne properties are very uncertain.

The editor does not attach much importance to the assertion that hops are narcotic, and that their influence upon the frame is wonderful, especially, when they are used in pillows, as he considers that the imagination plays a most important part in all such matters—*vide* spirit rapping, table turning, *et cætera.*

The properties of hops in brewing are important, but may be given in a few words.

All the medical qualities are to some degree exerted by the liquors in which they are employed. They render the beer more stimulant and cordial, and the bitter principle overcomes the disagreeable sweetness arising from the malt, and which, if unneutralised, might be offensive, if not injurious, to persons having weak digestive organs.

LAGOONS OF TUSCANY.—They are unique in Europe, if not in the world; and their produce has become an article of equal importance to Great Britain as an import, and to Tuscany as to export. They are spread over a surface of 30 miles, and exhibit, from the distance, columns of vapour, more or less according to the season of the year and state of the weather, which rise in large volumes among the recesses of the mountains.

As one approaches the lagoons, the earth seems to pour out boiling water, as if from volcanoes of various sizes, in a variety of soil, but principally of chalk and sand. The heat in the immediate vicinity is intolerable, and one is drenched by the vapour, which impregnates the atmosphere with a strong and somewhat sulphurous smell. The whole scene is one of terrible violence and confusion—the noisy outbreak of the boiling stream; the rugged and agitated surface; the volumes of steam; the impregnated atmosphere; the rush of waters among bleak and solitary mountains.

The ground, which burns and shakes beneath the feet, is covered with beautiful crystallisations of sulphur, &c. The character beneath the surface of Monte Cerboli is that of a black marl, striated with carbonate of lime, giving it, at a short distance, the appearance of variegated marble. Formerly the place was regarded by the rustics as the entrance of hell, a superstition derived, no doubt, from very ancient times; for the principal of the lagoons, and the neighbouring volcano, still bear the name of Monte Cerboli—*Mons. Cerberi.* The peasantry never passed by the spot without terror, counting their beads and imploring the protection of the virgin.

The lagoons have been brought into their present profitable action within a very few years. Scattered over an extensive district, they have become the property of Count Larderel, to whom they are a source of wealth more valuable, perhaps, and certainly less capricious, than any mine of silver that Mexico or Peru possesses.

That these lagoons, so valuable to the proprietor and to other nations, in the commercial importance of their productions, should have been permitted to discharge their enormous yield of boracic acid unheeded into the atmosphere—that they should have been so frequently visited by scientific men, to none of whom, for ages at least, did the thought occur that they contained in them mines of wealth, is a curious phenomenon: nor is it less remarkable, that it was left for a man whose name and occupation are wholly dissociated from science to convert these fugitive vapours indirectly into gold, by processes which, though simple, are nevertheless eminently chemical.

BREAD.—Nations from the earliest periods, as they approached civilisation, became, as it were, instinctively aware of the necessity of providing a more certain means of satisfying the cravings of appetite than the chase could afford; hence the introduction of agriculture has been one of the most effectual of human means to bring about that conversion from barbarism inherent in man, when left only to batten on a moor. This art is one of the conditions imposed upon man in consequence of his fall; and it continues to be the mainstay of human existence. It is observed that of all the material interests influencing humanity, there is none which so completely and tyrannically fetters the individual as the care for his daily bread; and though this great feature is evinced by different pursuits in life, yet these, like so many tributary streams and rivulets, are continually meandering till they terminate in the all-absorbing ocean of agriculture, which is the soul of all the other branches of industry invented in modern ages; without it, none other can stand. It is that art on which a thousand millions of men are dependent for their very life; in the prosecution of which about nine-tenths of the fixed capital of civilised nations are embarked; and upon which more than two hundred millions of human beings expend their diurnal labour; the parent and forerunner of all the other arts. In every clime, then, at every epoch, the investigation of the principles on which the rational practice of this art is founded ought to have commanded the attention of the greatest minds; and to no other object could they have been more beneficially directed.

Is it not strange that those engaged in the cultivation of the land are, as a body, amongst the most unscientific in the industrial pursuits of ancient and modern times? A paramount obstacle to scientific agriculture in the farmer is the great difficulty which the solution of natural science always presents to the investigator; and as nature's operations lie at the foundation of agriculture, the philosopher can, in numerous instances, go no further in offering an explanation than the humble husbandman.

Baking Powder. — Bicarbonate of soda and tartaric acid, mixed in equal proportions, are other substitutes for yeast. The result of their action is the same as the preceding; instead of chloride of sodium, however, tartrate of soda is formed. This mixture of bicarbonate of soda and tartaric acid is retailed by druggists under the name "baking powder." In preparing a dough with this compound, it is thoroughly mixed with the flour by agitation and sifting; the usual quantity of water is then added, and the whole quickly stirred and mixed up into the form of the loaf; as soon as the water comes in contact with the flour with which the mixture has been incorporated carbonic acid is liberated, on account of the chemical action consequent upon the solution. In making this kind of dough the hands cannot be conveniently used in the usual way, as the moist flour adheres to them; and therefore a mechanical agitator, or wooden spatula is employed; and when the mass has acquired sufficient consistency, without any lumps of dry flour being allowed to remain, it is shaped, put into the moulds or otherwise, and baked as speedily as possible. About a teaspoonful of the baking powder is sufficient for each pound of flour.

Fancy Biscuit Baking.—This branch, which was heretofore confined to retail confectioners, has latterly acquired an importance entitling it to be ranked among the minor staple commodities of the kingdom; for not only does the home demand absorb thousands of tons weight annually, but large quantities are exported to the colonies and foreign countries. This change, like many others of modern date, has been brought about by means of the manufacturing system: which, by its subdivision of labour, the skilful adaptation of machinery, and capabilities of production on an extended scale, has so diminished the cost as to place within reach of the million what was till of late years a luxury for the opulent. The production of fancy biscuits on the large scale mentioned is confined to some half dozen localities.

In this department one is struck with the variety of form and names of the products. So numerous are these that no fewer than sixty sorts are made, all reputed to be different; and what is most singular, every new kind seems for a season to take the place of its predecessors. This, if it augurs nothing else, at least indicates a love of novelty, which the trade tampers with to a vast extent, for large sums are yearly expended in procuring designs, as well in the form as in the manner in which the the biscuits are presented to the public.

Butter.—Though butter may be considered as one of the most common of all ordinary things, yet the ancients were nearly, if not entirely, ignorant of its existence. The older translators of Hebrew seemed to think that they had met with it in Scripture, but most modern Biblical critics agree that what was formerly interpreted butter signified milk or cream, or, more properly, sour thick milk. The word referred to plainly alludes to a liquid, as it appears that the substance meant was used for washing the feet, and that it was imbibed, and had an intoxicating influence. It is well known that mares' milk, when sour, has a similar effect.

REFRANGIBILITY OF LIGHT.—If you hold your finger in a perpendicular direction very near your eye, that is to say, at the distance of a few inches at most, and look at a candle in such a manner that the edge of your finger shall appear to be very near the flame, you will see the border of the flame coloured red. If you then move the edge of your finger before the flame, so as to suffer only the other border of it to be seen, this border will appear tinged with blue, while the edge of your finger will be coloured red. If the same experiment be tried with an opaque body surrounded by a luminous medium, such, for example, as the upright bar of a sash window, the colours will appear in a contrary order. When a thread of light only remains between your finger and the bar, the edge of your finger will be tinged red, and the edge next the bar will be bordered with blue; but when you bring the edge of your finger near the second edge of the bar, so that it shall be entirely concealed, this second edge will be tinged red, and the edge of the finger would doubtless appear to be coloured blue, were it possible that this dark colour could be seen in an obscure and brown ground.

MIND YOUR OWN BUSINESS.—To tell a man to his face to mind his own business, would be considered about equal to knocking him down. And yet it is one of the simplest rules of right conduct, and the most useful that mankind can adopt in their intercourse with each other. There is a great deal of the Paul Pry spirit in the human heart, or wonderful inquisitiveness in regard to the personal and private affairs of friends and neighbours. This spirit makes more mischief in the community than almost any other cause, and creates more malice, envy, and jealousy, than can be overcome in a century. Let every man mind his own business, and there will not be half the trouble in the world that there is at present.

FLIES.—A fly lays four times during the summer, each time eighty eggs, which makes 320; half of these are supposed to be females, so that each of the four broods produces 40.—1. First eight, or the 40 females of the first brood, also lay four times in the course of the summer, which makes 12,800; the first eight of these, or 1,600 females, three times, 384,000; the second eight twice, 250,000; the third and fourth eight, at least once each, 230,000.—2. The second eight, or the 40 females of the second brood, lay three times, the produce of which is 9,600; one-sixth of these, or 1,600 females, three times, 384,000; the second sixth twice, 256,000; the third six once, 123,000. —3. The third eight, or the 40 females of the third brood, lay twice, and produce 6,400; one-fourth of these, or 1,600 females, lay twice more, 256,000. —4. The fourth eight, or 40 females of the fourth brood, once, 2,200; half of these, or 1,600 females, at least once, 128,000.—Total produce of a single fly in one summer: 2,080,320!

BREVITY.—We must impress upon our correspondents generally the importance of *brevity* in their communications. A long letter, containing frequent repetitions of the same subject, however good the purport may be, is often laid aside, from want of leisure to examine and simplify the details. Brevity is not only the soul of wit, but it is the hinge of business, and an indispensable requisite in letter-writing. None valued this quality more highly than Dr. Abernethy, who could also appreciate it in another, as the following anecdote proves:—A woman, having burnt her hand, called at his office. Showing him her hand, she said—"A burn." "A poultice," quietly answered the learned doctor. The next day the woman returned and said—"Better." "Continue the poultice." In a week, she made her last call, and her speech was lengthened to three monosyllables:—"Well; your fee?" "Nothing!" said the pleased physician; "you are the most sensible woman I ever saw!"

HINTS TO MOTHERS.—If you wish to cultivate a gossiping, meddling, censorious spirit in your children, be sure when they come home from church, a visit, or any other place where you do not accompany them, to ply them with questions concerning what everybody wore, how everybody looked, and what everybody said and did—and if you find anything in all this to censure, always do it in their hearing. You may rest assured, if you pursue a course of this kind, they will not return to you unladen with intelligence; and, rather than it should be uninteresting, they will by degrees learn to embellish in such a manner as shall not fail to call forth remarks and expressions of wonder from you. You will, by this course, render the spirit of curiosity—which is so early visible in children, and which, if rightly directed, may be made the instrument of enriching and enlarging their minds—a vehicle of mischief, which shall serve only to narrow them.

MORNING PLEASURES. — Whoever is found in bed after six o'clock, from May-day till Michaelmas, cannot, in any conscience, expect to be free from some ailment or other, dependent on relaxed nerves, stuffed lungs, disordered bile, or impaired digestion. Nothing can be done—absolutely nothing—if you do not rise early, except drugging you with draughts—a luxury which the indolent morning sleeper must prepare himself to purchase dearly. We give him joy of his choice—bid him good bye, and springing out into the sunny air, we gather health from every breeze, and become young again among the glittering May dew, and laughing May flowers. "What a luxury do the sons of sloth lose?" says Harvey, in his *Flowery Reflections on a Flower Garden*, "little, ah! little, is the sluggard sensible how great a pleasure he foregoes, for the poorest of all animal gratifications!" Be persuaded; make an effort to shake off the pernicious habit. "Go forth," as King Solomon says, "to the fields—lodge in the villages—get up early to the vineyards;" mark the budding flowers—listen to the joyous birds—in a word, cultivate morning pleasures, and health and vigour will certainly follow.

DON'T TALK ABOUT YOURSELF.—Never introduce your own affairs for the amusement of a company; it shows a sad want of mental cultivation, excessive weakness of intellect, or a sort of *vanity*, always repulsive. Some folks cannot tell a story, relate an anecdote, or speak upon any subject, without using the significant pronoun *I*—as, when *I* was a boy, *I* was at the head of my class, and *I* never was surpassed—*I* can dive deeper, *I* can stay under longer, and *I* can come up dryer—*I* can, than anybody else *I* ever saw—*I* can. *I*—*I* think *I* am rather keen, *I* do—*I* do. Reader, what think you of *such* a specimen?

RESIN.—It is said that a small piece of resin dipped in the water which is placed in a vessel on a stove (not an open fireplace), will add a peculiar property to the atmosphere of the room, which will give great relief to persons troubled with a cough. The heat of the stove is sufficient to throw off the aroma of the resin, and gives the same relief that is afforded by the combustion, because the evaporation is more durable. The same resin may be used for weeks.

THE SUNNY SIDE OF THE STREET.—A free exposure to the light and to the sun's influence has a great effect in diminishing the tendency to disease. The sunny side of the street should always be chosen as a residence, from its superior healthiness. It has been found in public buildings, &c., that those are always the most healthy which are the lightest and sunniest. In some barracks in Russia, it was found that in a wing where no sun penetrated, there occurred three cases of sickness, for every single case which happened on that side of the building exposed to the sun's rays. All other circumstances were equal—such as ventilation, size of apartments, number of inmates, diet, &c.—so that no other cause for this disproportion seemed to exist. In the Italian cities, this practical hint is well known. Malaria seldom attacks the set of apartments or houses which are freely open to the sun, while on the opposite side of the street, the summer and autumn are very unhealthy, and even dangerous.

COKE AS FUEL FOR DOMES-

TIC PURPOSES.—The value of coke for general use in private houses is comparatively little known. When once introduced, and the proper manner of using it is understood, this kind of fuel becomes almost indispensable. The best kinds of Newcastle coal, to be kept burning, require attention and frequent applications of the poker. A coke fire, with the addition of a little small coal, which, in any other way, would be scarcely consumable, being properly made, will burn for hours without further attention or trouble, and at one-third less cost than a fire sustained by coal only. In the kitchen, coke is also very valuable. It makes the clearest fire for broiling, and a capital one for roasting. In all cases, the coke should be broken tolerably small.

COLOURS IN LADIES' DRESS.—Incongruity may be frequently observed in the adoption of colours without reference to their accordance with the complexion or stature of the wearer. We continually see a light blue bonnet and flowers surrounding a sallow countenance, or a pink opposed to one of a glowing red; a pale complexion associated with canary or lemon yellow, or one of delicate red and white rendered almost colourless by the vicinity of deep red. Now, if the lady with the glowing red complexion had worn a transparent white bonnet, or if the lady with the glowing red complexion had lowered it by means of a bonnet of a deeper red colour—if the pale lady had improved the cadaverous hue of her countenance by surrounding it with pale green, which, by contrast, would have suffused with a delicate pink hue; or had the face

"Whose red and white
Nature's own sweet and cunning hand laid on,"

been arrayed in a light blue, or light green, or in a transparent white bonnet, with blue or pink flowers on the inside, how different, and how much more agreeable, would have been the impression of the spectator! How frequently, again, do we see the dimensions of a tall and *embonpoint* figure magnified to almost Brobdignagian proportions by a white dress, or a small woman reduced to Lilliputian size by a black dress? Now, as the optical effect of white is to enlarge objects, and that of black to diminish them, if the large woman had been dressed in black, and the small woman in white, the apparent size of each would have approached the ordinary stature, and the former would not have appeared a giantess, or the latter a dwarf.

TO MAKE COURT PLAISTER.—Procure a small frame, that of an old school sixpenny-slate will suffice, strain tightly over it, in every direction, a piece of black silk. Prepare a *size*, by dissolving thirty grains, by weight, of the best small shred isinglass, in six drachms, by measure, of common gin. Set this on the hob in a tea cup, covered over, to acquire heat. When the isinglass is quite dissolved add gradually thirty drops of Friars' balsam (compound tincture of benzoin), occasionally stirring the fluid or size on every addition, with a strip of glass, or the small end of an ivory spoon. Then take a broad, flat, camel-hair pencil, such as is used for the first wash of the sky in water-colour drawings, and cover the silk with a coating of the fluid; then let it dry in a warm room. Repeat the coating as often as the silk shall become dry, and till the surface appears quite glossy. If the size shall be found insufficient to finish the process, more must be prepared; eight to twelve applications of the fluid, according to the texture of the silk, will be required. Should the size become too thick, a few drops more gin may be added.

THE PRODUCTION OF VALUABLE MATTER FROM THE MOST WORTHLESS MATERIALS.—Instances of this nature are constantly occurring. The skins used by the gold-beaters are produced from the offal of animals. The hoofs of horses and cattle and other horny refuse, are employed in the production of the prussiate of potash—that beautiful yellow crystallised salt which is exhibited in the shops of some of our chemists. The worn-out saucepans and tin-ware of our kitchens, when beyond the reach of the tinker's art, are not utterly worthless. We sometimes meet carts, loaded with old tin kettles and iron coal-scuttles, traversing our street. These have not yet completed their useful course. The less corroded parts are cut into strips, punched with small holes, and varnished with a coarse black varnish, for the use of the trunkmaker who protects the edges and angles of his boxes with them. The remainder are conveyed to the manufacturing chemists in the outskirts of the town, who employ them, in conjunction with pyroligneous acid, in making a black dye for the use of calico printers.

EMBLEMATIC STONES.—S. W.—THE JEWELS OF THE MONTHS.—In Poland, according to a superstitious belief, each month of the year is under the influence of some precious stone, which influence is attached to the destiny of persons born during the course of the month. It is, in consequence, customary amongst friends, and more particularly between lovers, to make, on birthdays, reciprocal presents, consisting of some jewel ornamented with the tutelar stone. It is generally believed that this prediction of happiness, or rather of the future destiny, will be realised according to the wishes expressed on the occasion:—

January.—The stone of January is the Jacinth, or Garnet, which denotes constancy and fidelity in any sort of engagement.

February.—The Amethyst, a preservative against violent passions, and an assurance of peace of mind and sincerity.

March.—The Bloodstone is the stone of courage and wisdom in perilous undertakings, and firmness in affection.

April.—The Sapphire, or Diamond, is the stone of repentance, innocence, and kindliness of disposition.

May. —The Emerald. This stone signifies happiness in love, and domestic felicity.

June.—The Agate is the stone of long life, health, and prosperity.

July.—The Ruby, or Cornelian, denotes forgetfulness of, and exemption from, the vexations caused by friendship and love.

August.—The Sardonyx. This stone denotes conjugal felicity.

September.—The Chrysolite is the stone which preserves and cures madness and despair.

October.—The Aquà-Marine, or Opal, signifies distress and hope.

November.—The Topaz signifies fidelity and friendship.

December.—The Turquoise is the stone which expresses great sureness and prosperity in love, and in all the circumstances of life.

FACTS ABOUT MILK.—Cream cannot rise through a great depth of milk. If milk is therefore desired to retain its cream for a time, it should be put into a deep narrow dish, and if it be desired to free it most completely of cream, it should be poured into a broad, flat dish, not much exceeding one inch in depth. The evolution of cream is facilitated by a rise, and retarded by a depression of temperature. In wet and cold weather the milk is less rich than in dry and warm; and on that account more cheese is obtained in cold than in warm, though not in thundery weather. The season has its effects—the milk in the spring is supposed to be best for calves, in summer it is best suited for cheese, and in autumn the butter keeping better than that of summer. Cows less frequently milked than others give rich milk, and consequently much better. The morning's milk is richer than the evening's. The last drawn milk of each milking, at all times and seasons, is richer than the first drawn, which is the poorest.

LIVE FOR SOMETHING—"Thousands of men," says Chalmers, "breathe, move, or live, pass off the stage of life, and are heard of no more —Why? they do not partake of good in the world, and none were blessed by them; none could point to them as the means of their redemption: not a line they wrote, not a word they spake, could be recalled; and so they perished; their light went out in darkness and they were not remembered more than insects of yesterday. Will you thus live and die, O man immortal!

HINTS ON DRESS.

By Mrs. A. Adams.

We have some warm weather now, and with it some pretty costumes. Full flounced thin dresses are very much worn. Four, five, and even six flounces on a skirt are very pretty, and for thin material nothing else is seen. Some silk dresses are made with three or four, but the two wide flounces are still worn on silk. Double skirts are worn, but do not suit all figures; they are elegant for a certain style of figure if made properly. Judgment is required. The height of a lady must be considered. Some double skirts are made far too short; they should be in most cases only ten or twelve inches from the bottom of the dress. It is ungraceful when your skirt looks cut in two. Double skirts for ball dresses are always looped up; sometimes all round the trimming, a little way apart, or else only in front, once or twice. For a person of moderate height, four flounces will look well, the lower part of your jacket giving the skirt the appearance of five flounces. Light jackets trimmed, are the still all the fashion; if in muslin or lace, a frill five inches deep round the waist just full enough to set easy is pretty. Frills to match on sleeves. They are easy to wash, and look well when done. Three frills on the straight way of the material a little way apart put on your sleeves, and do not make them too full. The braces on the jackets are still worn Cut them the straight way of the material.

For walking dress, silk cloaks are still worn, black and coloured, to make a little change. This summer some ladies are wearing a kind of gauze shawl, black middle and coloured borders, and a very graceful, pretty effect they have. Black lace shawls are much worn, and very elegant they look. I know of nothing prettier or more serviceable for any lady over the age of twenty years. For young ladies I should recommend lace cardinals, or lace and ribbon mixed, a row of wide black gauze ribbon and then a row of lace, the lace not quite so wide as the ribbon, but both the same width will look very well. Have a paper pattern, and put your rows round and round, until you make your cape the proper size; press it with a moderate warm iron; when finished, your ribbon and lace will both require gathering in some places.

The Value of a Garden.—I hold that any farmer, who is worthy of the name, will prepare a small plot of ground for his wife and daughters, and that he will, out of love to them, make it all they can wish or desire. It is these little things that make home pleasant and happy; and it has been the lack of these that has driven many a loving heart out into the world and away from a sterile barren home. Give the wife and daughters a place to plant, tend, and rear their flowers; help them if needs be, although it may take an hour sometimes that is hard to spare, and you will a thousand times bless God for so ordering your mind that you did it. What husband or father, rugged though his nature may be, does not fondly linger round a home made so bright and cheerful by the fairy hands of his wife and daughters, scattering, as it were, in his way, the beauties of their little plot? What son or brother ever forgets his home who has found his room daily perfumed with flowers which have been raised by the hand of a fond mother or gentle loving sisters, and placed there through the promptings of their own affectionate hearts? What daughter ever forgets the home where she has cultivated her little garden, and year after year been so happy in the blossoms which have been borne upon the plants she has watered and tended with such patient care? Parents, brothers, sisters, the dear old home—all come back to her, though years may have passed away in the scent or bloom of every flower. The family is seldom unhappy whose dwelling is surrounded with shady trees, and whose garden is gay with cultivated plants. Do not, then, I beseech you, forget the little flower-garden.—*Mr. Peter's Address.*

BEAUTY IN MEN.

"I CAN tell when a woman's face is beautiful," said a friend to us the other day, "but I don't know what you call a handsome man."

We might have referred him to the popular romances of the present day for the description of manly beauty; but having little sympathy for those perfect beings with expansive brows of snowy whiteness, oblong, drooping, deep, piercing blue, black, or grey eyes, finely chiselled features, rich, wavy curls, and all the minutiæ of fancied perfection, we simply said we believe there was no particular standard of beauty recognised among the ladies with reference to his sex, and we think that in so saying we were correct.

> "I do not like a pretty man,
> With pretty lisp and pretty walk,
> With hands that prettily sport a fan,
> And delicate lips that prettily talk;"

says a lady at our elbow, an interesting and sensible one too.

We believe, as a general thing, ladies do not like what are called pretty men; their style of face is too softly feminine; there is generally no break-up in the monotony of expression, no sudden gleam of joy, no flitting ray of thought; they are like a cloudless sky, which needs here a massive array of dark clouds, there a broken line of fleecy vapour, here a bright spot of brilliant hue, there a pale azure, a soft, almost imperceptible blending into the white pure light that sometimes silvers our northern heavens as with a dazzling wreath, to make its beauty impressive and lingering. A pretty man is too apt to be mincing and affected; his smile is always sweetly interesting; his whiskers—he would not have them encroached upon a tenth of an inch for a dozen little worlds like ours; his reputation is at stake should an unsightly pimple obtrude its hideous outline upon the fairness of his complexion.

Strong outlines of face, well-defined brows, marked and prominent forehead, any sort of eyes, so that they are capable of being lighted up with the soul—these, with us, constitute a handsome man, for the reason that rough, heavy features, if they are not in any way deformed, are capable of the greatest play of expression; and expression, after all, is the truest test of beauty, for it captivates while it pleases, and stamps itself upon the heart, not upon the imagination. Do we not weary of the most perfect picture? Even in contemplating the cherished semblance of a friend, the heart almost aches for a change; a frown would be preferable to that immovable placidity or unbending sternness.

The frank, open countenance, cheerful with the light of a sunshiny disposition; the thoughtful, placid brow; broad, or low lips, firm when in thought, yet flexible and smiling in conversation; the goodness of a refined nature illuminating every lineament: give us these, in preference to all your set, fine faces. And even the irregular features of what are called decidedly plain men, we have seen glow with an expression absolutely beautiful, as some all-pervading theme of interest lighted up the face, so that the coarse mouth, the crooked nose, even the heavy shapeless forehead, and the dull eyes—have caught a reflection of the inner loveliness—the beauty of the soul.

Then, gentlemen, remember it does not need the air and face of an Adonis to please and interest us ladies. Only let us read upon the countenance the stamp of a cultivated mind, or the quick lighting up of the eye as some generous impulse prompts to an act of kindness; let us behold you at once dignified and courteous, gentle and refined to all alike, even to the erring, delicate in your attentions (especially to us ladies), unbending in your will only when in the absolute right, gentlemanly in your address, and neat in person, and we will all—those whose opinion is of any value, of course—pronounce you handsome, without a dissenting voice.

Remember that the qualities of the heart and the actions of the life stamp the features with an ineffaceable mark either with goodness or vileness; and cultivate those affections and habits, which will write upon the tablets of your countenance that which no one reading can but love and admire.

THE CHEESEMITE.

THE *Acarus domesticus*, or common mite, is of all the species the best known. It is found in great abundance upon old cheese, on dried or smoked meat, on birds and insects in collections of natural history, on old bread, and dried up confectionary, which has been kept too long. It is for this reason that Degeer has named this species *domestic*. He also observed some of these mites in the flower-pots which he had in his chamber. This insect is almost invisible to the naked eye; its colour is a dirty white, bordering a little on the brown, with two brown spots produced by the internal parts appearing through the skin, which is transparent. The body is bristling with hairs, thick, oval, a little narrowed in the middle; its anterior part is terminated in a cone, or a a sort of muzzle, containing the organs of manducation. The mandibles have been distinguished; the palpi are very short and setacious; the skin is smooth and tense; the eight feet are rather long, always curved towards the plane of position, terminated by an oval piece, transparent, and swelled like a small bladder with a long neck, having in front a sort of small cleft or separation. The insect can impart to it all kinds of inflections, swell and contract it. It dilates it when walking, and contracts it, so as to make it disappear, when the foot does not touch the plane of position, and is raised. The vessicle can be folded in two in its length, by reason of the cleft which we have just mentioned. Each moiety is furnished with a small hook, which enables the mite to fix itself on the object upon which it walks. The feet are of equal length, but the two anterior pair are much thicker than the two last. The numerous hairs with which the body is bristled are barbed on both sides, and what is singular is, that the insect can move them on one side or the other. "Each hair," says Degeer, "must necessarily be attached to, or have communication with, a muscle, which gives it motion." What marvellous mechanism in so small an object! These sort of prickles are placed upon the body in regular order: two are observed on the upper part of its anterior extremity, which represent, as it were, two small antennæ. There are some on the feet which are finer, and on which Degeer has observed no barbs. The females are larger than the males. The female lays some oval eggs, very white, and which appear to be reticulated or spotted with brown. Leuwenhoëk, who has particularly observed this species, saw but six feet on the little ones just disclosed.

ROTUNDITY OF THE EARTH.

FOR many ages mankind supposed the earth to be a vast plain, bounded on all sides by the sea and sky. They supposed the sun, moon, and stars to be at no great distance from the earth, and that these moved daily from east to west.

Though this was the belief of the great mass of mankind, there were a few attentive observers of the motions of the heavenly bodies who thought the earth to be round, like a ball; but they dared not tell their views, except in secret, lest they should be persecuted, and even endanger their lives.

It is only about three hundred years since the true theory of the figure and motion of the earth began to be generally received. A few years previous to that period a person would have been in danger of imprisonment for life, or even of being put to death, had he taught the opinion now held concerning the shape of the earth.

We learn from history that the learned Spegelius, of Upsal, in Sweden, was burned at the stake because he taught that the earth was round. Only a little more than two centuries ago, the celebrated Galileo was confined in prison because he proclaimed that the earth turned on its axis, and moved around the sun.

Nicholas Copernicus, who was born at Thorn, in Prussia, in 1473, was the author of the theory of the Solar system, which is now received by all enlightened nations. But he was threatened banishment and even death if he would not deny his belief, so prejudiced by ignorance were the minds of that period. Yet truth prevailed, and in honour of its author the theory is called the Copernican system.

How the ancients first became convinced that the earth was round we have no means of knowing; but we will here give a few facts and observations which prove it to be a globe:—

1. Persons have sailed around the world, and come back to the place from which they started, as a fly would do by crawling around an apple. But, since there are so many continents and islands to obstruct a direct passage, it may not appear plain to some how sailing around the world will prove anything about its shape.

That this may be better understood, we will suppose a vessel to start from Rio Janeiro, in South America, and sail directly east. In a few weeks it would come to the western coast of Africa. Now navigators carry with them a compass and other instruments by which they can always tell the course they are sailing, and how far they move in any direction.

On arriving at the coast of Africa, the captain changes the course of his vessel and sails south until he has passed the Cape of Good Hope; then he goes east again till he gets beyond Africa, when he turns toward the north and sails as far as he had gone south, which will bring him in a direct line east of his starting-place.

He will now continue his course eastward, till coming to Australia: and after sailing around that, in a like manner, to a point directly east of Rio Janeiro, will again proceed in an easterly direction, and at length arrive at the western coast of South America. Then, by sailing south, around Cape Horn, and going north again, he will arrive at the place from which he started.

It is by thus making allowances for the land which is sailed around, that the navigator knows he has continued in one general direction. Once it was considered an extraordinary act to have sailed around the world, but now many persons return every year from such a voyage. The time thus required is from one to two years.

2. When a ship goes out to sea, we first lose sight of the hull, or body of the ship; then of the sails and lower rigging, and lastly of the masts. When a ship approaches the land, the top of the mast is seen first, then the lower parts of the vessel gradually appear. If the earth were an extended plain, the largest parts of the ship, when leaving the shore, would be seen last, and on approaching land these would be seen first.

If a person stands on the deck of a vessel when leaving the shore, the land and less elevated objects are first lost sight of, and the steeples and highest parts of all objects are seen last. Now these appearances are the same in every part of the world, which man has visited, hence it follows that the earth is regularly curved on all sides.

3. When the moon is eclipsed, it is darkened by passing through the earth's shadow. This shadow, as seen on the surface of the moon, is always of a circular form, such as a round ball would make.

4. If we stood on the equator, the north star would be in the horizon, where the earth and sky seem to meet. On going twenty degrees to the north, this star would appear to have arisen twenty degrees above the horizon. If we proceeded forty-five degrees north, this star would appear forty-five degrees above the horizon, and so on. The reverse would be the case on going south again. Then the stars in the north would sink and new ones rise in the south.

These changes prove that the earth is round from north to south, as they could not occur were it otherwise. The first-mentioned observation proves that the earth is round from east to west; the second shows its general convexity; and all combined afford convincing proofs that the earth is round like a ball.

LIFE'S PROGRESS.

"We bring our years to an end as it were a tale that is told."—*Psalms.*

CHILD! that so securely clingest
To thy mother's side,
And thine arm around her flingest,
Lest some harm betide!
Thou who art so archly smiling,
Void of care thy brow;
No wrong thought thy soul defiling—
Child, how old art thou?

And the child look'd up with a face of glee,
Which beam'd with a smile of ecstacy;
But his lisping tongue no words express'd,
As he closer clung to his mother's breast:
And the guileless glance of that sinless eye
Was all the innocent one's reply.

Boy! that mour[illegible] art creeping
To thy tasks to[illegible]
And to-morrow high art leaping
On thy joyous way;
Thou whose every thought is bounded
By the present *now;*
Thy prospects all by hope surrounded,
Boy, how old art thou?

And the boy answer'd haughtily,
And his bosom swell'd perceptibly:—

"Call me not Boy—I am in my teens,
And long have forgotten my childhood's scenes;
And five brief years will soon be gone,
Then hail! all hail to twenty-one!
Hurrah! for the day that shall set me free,
When none shall dare to dictate to me!"

Man! that through the crowded city
Passest in thy prime,
Doling forth superfluous pity
To the sons of Time;
Thou, whose half of life is wasted,
Unredeem'd thy vow;
Religion's waters scarcely tasted—
Man, how old art thou?'

And the man replied abstractedly,
In a voice that sounded remorsefully:—

"Oh! ask me not—the days are past,
That I vainly thought for aye would last!
The plans that I form'd in my early years,
Have brought to me only griefs and tears;
And those whom in youth I did most despise,
Have been lifted up in the nation's eyes,
Whilst, unimproved, the powerful sway
Of my forty summers hath pass'd away!"

Grey-hair'd, old! that totterest weakly
'Cross thy chamber floor,
Drinking sounds, benign and meekly,
Soon thou'lt hear no more;
Thou whom "mere oblivion" shroudeth,
Whose last days are now,
Ere "sans speech" upon thee crowdeth,
Say, how old art thou?

And the grey-hair'd man essay'd to speak,
And a tear pass'd over his wither'd cheek;
But there came no sound—he bow'd his head—
His age untold, he was with the dead!

A WOMAN AS SHE SHOULD BE.

IN person decent and in dress,
Her manners and her words express
The decency of mind;
Good humour brightens up her face,
Where passion never leaves a trace,
Nor frowns a look unkind:
No vexing sneer, no angry word,
No scandal from her lips is heard
Where truth and sweetness blend;
Submissive to her husband's will,
Her study is to please him still,
His fond and faithful friend;
She watches his returning way,
When from the troubles of the day
He seeks an hour of bliss—
She runs to meet him with a smile,
And if no eye be near the while,
The smile is with a kiss!

HOPE.

LET none look back on darker years,
Where Hope's lone star had set;
But let us e'er pursue the right,
And all the wrong forget.

Let none despair, for brighter hours
Will surely come at last;
And thousands yet will hail the day,
When sorrowing scenes are past.

PLEASURES.

PLEASURES are like poppies spread,
You seize the flower, its bloom is shed;
Or like the snow-falls in the river,
A moment white—then melts for ever;
Or like the borealis race,
That flit ere you can point their place:
Or like the rainbow's lovely form
Evanishing amid the storm—
Nae man can tether time or tide.—*Burns.*

Call not that man wretched, who, whatever ills he suffers, has a child to love.

KINDNESS.

It is said that bees and wasps will not sting a person whose skin is imbued with honey. Hence those who are much exposed to the venom of these little creatures, when they have occasion to hive bees, or take a nest of wasps, smear their face and hands with honey, which is found to be the best preservative. When we are annoyed with insult, persecution, and oppression, from perverse and malignant men, the best defence against their venom is to have the spirit bathed in honey. Let every part be saturated with meekness, gentleness, forbearance, and patience, and the most spiteful enemy will be disappointed in his endeavours to inflict a sting. We shall remain uninjured, while his venom returns to corrode his own malignant bosom; or what is far better, the honey with which he comes in contact will neutralise his hatred, and the good returned for evil will overcome evil with good.

BEARDS AND SHAVING.

Connected with the subject of beards, there is much that is curious and interesting. The difference which the beard exhibits in different countries would alone form a curious matter for inquiry. It is the cherished appendage of some nations, the despised excrescence of others; some have it in profusion, others are almost without it. In hot countries, the beard is dark, dry, hard, and thin; in cold, thick, curling, and light in colour. Poor, dry, and indigestible food, renders the beard hard and bristly; while wholesome and digestible nutriment makes it soft.

Civilised life appears to be most favourable for producing luxuriant beards. Savages are seldom furnished with large ones; though there is, perhaps, no people, however savage, upon whose chins a few stunted and stray hairs do not appear. At one time it was believed that the Indians were naturally destitute of beards; but stricter inquiry has since shown that they pull out, root and branch, the scanty supply of hair with which their chins are furnished. In this they are not alone; and it may be generally stated, that those on whose faces no culture can raise a decent beard, consider the little they possess a deformity of which they would be well rid.

Excepting the Greeks and Romans, all the nations of antiquity appear to have prized and cultivated the beard. Even in Greece, it was worn until Alexander's time, and in Rome, until 300 B.C. In both nations beards were retained by the philosophers and priests long after they were given up by the mass of the people. Among the Egyptians, on the other hand, it was the priests that shaved, and that not only in the face, but the head and the whole body. In times of mourning, however, they let their beards grow; and so did the Romans, after they became a shaven people; while the Greeks, in the time of beards, on similar occasions, were accustomed to shave. After the abolition of beards, among the Romans a long beard became a token of its owner's being a slave. On the other hand, the Franks who were a bearded nation, ordered all bondsmen to shave the chin.

In the middle ages, beards were generally in high esteem. Among the early French monarchs, it was the custom to attach three hairs of the sovereign's beard to the seal of all important official documents, which probably became so numerous as to threaten the royal beard with extinction, and the custom was abolished.

The natives of Europe, generally speaking, are now a shaven people, while the Asiatics are as generally bearded. Among Asiatics, the Persians have the finest and best cultivated beards; we shall, therefore, bestow a few remarks upon Persian beards. The Persians, in early times, paid extreme attention to their beards. According to Chrysostom, their kings had them interwoven with gold thread. During one dynasty, however, only moustachios were allowed. But at the present time, the ancient zeal for them has revived, and the king has a magnificent specimen—one reaching to the waist, and claiming the admiration and adoration of his numerous subjects. Naturally, the beards of the Persians grow to a larger size than those of any other people. Mostly, they are black by nature; but the practice of dyeing, either to strengthen the intensity of the black, or to give that colour where it does not exist, is universal. The operation of dyeing is both tedious and painful, and must be undergone every fortnight. It is always performed in the hot bath, as the hair is then saturated, and takes the colour better. At first, the beard is plastered over with a thick paste of henna, which, after remaining for about an hour, is washed away, leaving the beard of a deep orange colour, bordering on that of brick dust. Many of the common people are so captivated by the meteoric appearance of the beards produced by this first application, that they decline having it changed to black. In the second operation, another paste, made from the leaf of the indigo, is applied in the same manner, and allowed to remain for two hours, after which the patient leaves the bath, graced with a dark, bottle-green beard, which in the course of twenty-four hours, becomes a jet black. Throughout all this, the patient is obliged to lie on his back; while the dye, in the application of the second preparation. causes the lower part of his face to smart and burn, and contracts the features in a most mournful manner. The whole operation is one of great delicacy, and often results in a purple or parti-coloured beard.

The comparative advantages and propriety of shaving, and of permitting the beard to grow, it is not easy to determine. Much has been said that is good for both sides; yet, after all, it seems more a matter of taste than anything else.

The practice of shaving probably originated at first from its being found that the beard afforded too good a hold to an enemy in battle; and for this cause shaving was originally practised among the Greeks, who continued in it until Justinian's time, when long beards came again into fashion, and so remained until Constantinople was taken by the Turks. The Romans appear to have derived the custom of shaving from the Sicilians, who were of Greek origin; and the refinement of daily shaving was first introduced by no less a personage than Scipio Africanus. At the close of the Republic beards were rare; and some of the Emperors lived in great fear of having their throats cut by their barbers. For the sake of hiding the scars on his face, the Emperor Hadrian wore a beard, and this of course brought that appendage again into use; but the custom did not long survive him.

Among the Romans, shaving did not commence with the appearance of the hair; the youth was permitted to raise a small beard which was shorn for the first time with great ceremony. Persons of rank had the operation performed for their sons by men of rank higher than themselves; and by this act such person became the youth's adopted father. The day was kept as a festival, visits were paid to the young man, and he received presents from his friends. The first crop of beard was solemnly consecrated, generally, to the household gods.

ONE.

One hour lost in the morning by laying in bed will put back all the business of the day.

One hour gained by early rising is worth one month of labour in a year.

One hole in the fence will cost ten times as much as it will to fix it at once.

One diseased sheep will spoil a flock.

One unruly animal will learn all others in company bad tricks.

One drunkard will keep a family poor and make them miserable.

One wife that is always telling how fine her neighbour dresses, and how little she can get, will look pleasanter if she talks about something else.

One husband that is penurious or lazy, and deprives his family of necessary comforts, such as their neighbours enjoy, is not as desirable a husband as he ought to be.

One kind word may turn aside a torrent of anger.

One doubt may lead to disbelief.

One glass of wine is better than two.

One is God alone.

ENGLISH NAMES.

NAMES were first used amongst men for distinction. The Jews gave names at their circumcision, the Romans on the ninth day after their children's birth, and the Christians at their baptism; which names were generally intended to denote the future good wishes or hope of parents toward their children.

English names of baptism are generally either Saxon — as Edmund, Edward, Edwin, Gilbert, Henry, Leonard, Robert, Richard, Walter, William, &c.; or from the Bible and Testament—as Abraham, Isaac, Jacob, John, Thomas, James, &c.; or it sometimes consists of the mother's surname, or occasionally of two Christian names, which is still customary in other countries, especially in Germany.

The French called names superadded to the Christian names, surnames, that is, *super nomina.*

The Hebrews, Greeks, and other nations of antiquity, did not affix surnames to their families, but counted thus: for example, the Hebrews, Melchi Ben Addi, Addi Ben Casam, &c.; the Welsh, Hugh ap Owen, Owen ap Rhese; the Irish, Neal mac Con, Con mac Dermoti, &c.

As Christian names were given to distinguish persons, so surnames were used for the distinction of families.

About A.D. 1000, the French began to take surnames, with *de* prefixed for a place, and *le* prefixed for some other qualifications. The English also adopted the use of surnames, but it was not until the reign of Edward the First that they became general.

Offices of honour have given rise to many surnames; for example, the Duke of Ormond and his descendant took the surname of Butler, their ancestor, Edward Fitz-Theobald, having been made Butler of Ireland; and again, John, Count Tanquerville, of Normandy, being made chamberlain to the King of England, about six hundred years since, his descendants still bear the same coat of arms, by the name of Chamberlain.

At first the English gentry took the names of their birthplaces, or habitations, for surnames, as Thomas of Aston, or East-town; John of Sutton, or South-town; and, as they altered their habitation, so they changed their surname. When they afterwards became the lords of manors, they styled themselves Thomas Aston of Aston, John Sutton of Sutton.

Among the Saxons, the common people added for surname their fathers' names, with *son* at the end thereof—as Thomas Johnson, Robert Richardson. They often took their father's nickname, or abbreviated name, with the addition of an *s*, as Gibs, the nickname of Gilbert; Hobs, of Robert; Nick, of Nicholas; Bates, of Bartholomew; Sams, of Samuel; Hodges, of Roger: — whence Gibson, Hobson, Nickson, Batson, Sampson, Hodson, &c. Many were surnamed from their trades, as Smith, Joyner, Weaver, Walker, Goff, &c.; or from their employments, as Porter, Steward, Shepherd, Carter, Spencer, Cook, Butler, Kemp; or from their places of abode, as Underwood, Underhill, also Atwood, Atwell, Athill; or from their colours or complexions, as Fairfax, Pigot, Blunt, or Bland; and from birds and beasts, as Arundel, Corbet, Wren, Finch, Woodcock, Lamb, Fox, Moyle, &c.

The Norman descendants in this country, about 200 years after the Conquest, also took their fathers' Christian names for surnames, with *Fitz* or *Fils* prefixed, as Robert Fitz-William, Henry Fitz-Gerard; afterwards Williamson, Gerardson, &c.

The Welsh were the last to adopt surnames, which they did chiefly by dropping the *a* in *ap*, and annexing the consonant to their fathers' Christian names; as, instead of Evan ap Rice, Evan Price; and for ap Howel, Powel; ap Hughe, Pughe; ap Rogers, Progers, &c.

The most ancient families in this country are such as have taken their surnames from places in Normandy, or England and Scotland, as Evreng, Chawort, Seymour, Nevil, Montague, Mohun, Biron, Bruges, Clifford, Berkley, Arcy, Stourton, Morley, Courtney, Grandison, Hastings, &c., which formerley had *de* prefixed, but now made one word, as Devereux, Darcy, &c.—

CONTRAST; OR, ORDER AND DISORDER.

Captain Wideopen's house stands in a broad street that runs for a mile in length through the village of Decay. It is an old farm-house one story high, with its gable end to the street. In front of the house is the wood-pile, spread out so as to cover a rood of ground. As you pass by, the barn, cow-house, and yard, with its deep morass of manure in high flavour, salute the eye and nose. The pig-pen, wide open and in full view, is between the house and barn. In a warm day the congregation of vapours is overwhelming. The well, the wash-shed, the wood-shed, are all in full view to the passers-by. The space around the front door is defiled by the pigs, who root and grunt there by day, and by the geese, who roost there by night.

Thus, all the unsightly and unseemly objects are spread out to view, and the scene is embellished by the addition of broken sleighs, sleds, ploughs, waggons, carts, old posts, &c. There lies a shapeless heap of stones; yonder is a gate with one hinge, which will soon be broken for want of care. Here is a pair of bars thrown down; there the stone wall has tumbled over!

Such is the scene presented by the residence of a wealthy, respectable farmer in New England; and I am sorry to say that there are hundreds, nay, thousands, like it in Old England! —ay, in Old England! Not that every village is a Decay, or every farmer a Wideopen. No! some of our villages are delightful, and some of our country people are patterns of good order and neatness. But I am speaking of those who are not so. And if these pages should come into the hands of any person, in Old England or out of it, who is ignorant of the advantages of neatness and order, let me urge upon him, as worthy of immediate attention, the following remarks, drawn from observation and experience:—

1. A man whose house, like Captain Wideopen's, is out-of-doors marked by disorder, confusion, and want of cleanliness, is generally the same in-doors.

2. Where there is confusion and want of neatness, though there may be plenty of bread, butter, milk, cheese, fuel, clothing, and other necessaries, there is little comfort, little thrift, little good-nature, little kindness, little religion, little beauty, little peace or happiness.

3. Children brought up in the midst of confusion and want of cleanliness, are likely to be low, vulgar, and vicious in their tastes, and in their character. Let fathers and mothers consider that, if they bring up their children in this way, they are schooling them to be drunkards, profane, mean, base, wicked, and despised; that the schooling of home is the most lasting of all schooling; that the ferule of the schoolmaster cannot efface what the father and mother have taught; that the preacher cannot destroy the die stamped upon the young heart at home by parental example! Look to this, ye fathers and mothers; and if for your own sakes ye are indifferent to neatness and order, for the sake of the young immediately around you be no longer so.

4. There is a certain tendency, in the want of order and neatness, to cause ruin and waste; consequently a man who, like Captain Wideopen, allows things to go on in this way, generally gets poorer and poorer, till at length mortgages, embarrassment, debt, losses, and the law, bring him to poverty.

5. Neatness and good order contribute to health, wealth, and happiness; while opposite habits tend to disease, misery, poverty, vice, and short life.

Let us now turn to another scene. The village of Thrivewell is also a New England village, and is remarkable for its pleasant, cheerful aspect. Every person who rides through it is delighted; and the place has such a reputation, that the land is worth more, and the houses will sell for more, than in almost any other place of the kind you can name. And this arises from the good taste, neatness, and order which characterise the inhabitants. I will give you a sketch of the house belonging to Captain John Pepperidge; a careful, correct, upright man, who has risen from poverty to ease and competence, by industry, economy, and prudence.

His house stands three or four rods back from the street; the front yard is green, grassy, and decorated with handsome trees. The wood-pile is fenced in; the barn-yard, pig-pen, &c., are also tidily fenced. It is a favourite proverb with Pepperidge, that there *should be a place for everything, and that everything should be in its place.* This is his great maxim; and he not only observes it himself, but he requires every man, woman, and child about him to observe it also. He says it saves him one hundred pounds a year.

He has other rules, such as *a stitch in time saves nine;* thus, as soon as a stone falls off the wall, he puts it up; when a rail gets out of the fence, he replaces it; when a gate is broken, it is forthwith repaired; if a clapboard is loose, a nail clenches it. Thus, matters are kept tight and tidy. On a wet day, instead of going to the tavern, he spends the time in making little repairs. At odd moments of leisure, he sets out trees and shrubs; thus, year by year, beautifying his place, and rendering it not only more comfortable, but also worth more money in case he should ever desire to sell it.

Farmer Pepperidge takes great pleasure, and perhaps a little innocent pride, in his place, though, to say the truth, it is by no means costly. He loves better to spend his time in making it more convenient and pleasant, in setting out trees, improving the grounds, mending the fences, &c., than in going about to talk politics, or gossip upon other people's business, or in haunting a tavern bar-room. In short, his home is comfortable, pleasant, delightful. It is neat and orderly, inside and out. And he has made it so; though his wife, having happily caught the influence of his example, contributes her share to the good work. His children are well dressed, well educated, well behaved. Can such a man be a drunkard? Can he be vicious? Can he be wicked? Who has so good a chance of health, wealth, and happiness? Who so likely to be respected by his neighbours? Who so likely to do good by his influence and example? Come, Captain Wideopen, I pray you, and learn a lesson of Farmer Pepperidge!

Let us look at the practical effect of Pepperidge's example. Formerly, the village of Thrivewell was called Uneasy Swamp, and was inhabited by a set of people becoming the name. They were poor, ignorant, idle, and uneasy. They were jealous of all rich people, and considered the unequal distribution of property a dreadful evil. They were equally jealous of the wise, and considered the unequal distribution of knowledge a nuisance to be abated. They were also jealous of the virtuous, and hated nothing so much as a just and honest man. In short, they were, half a century ago—where some conceited, but ignorant and ill-minded people are now—willing to level every body and thing to their own standard. If a candidate for office was up, who addressed their prejudices, and coaxed them with promises, though meaning to cheat them, he was the man for them. If he was known to be mean, slippery, and unprincipled, fellow-feeling seemed to render them kind, and the more ardently they espoused his cause. Such was Uneasy Swamp; a place which may have its images still in some parts of the country.

VALUE OF GOOD WIVES.

We are not about to write a homily on the duty of our wives; our sex have more frequently done this than pointed out the duty of husbands—duties which, we fear, are fully as often neglected as those of the wife. We commenced this article to remind men that they have no friend so entirely true to their interest as the wife. It is, therefore, more safe at all times to advise and counsel with our best friend, in preference to those who are less interested in our welfare. A distinguished man once said that he never prospered in any enterprise where he had acted against the advice of his wife. Misfortunes, or the result of bad speculations, always bear on her most heavily. Her interests are inseparably identified with his own. The ready perception and timid caution of woman make her, especially to the impulsive and adventurous, peculiarly qualified to check the rash and impetuous act. Many a man whose fortunes are broken, would have been in a happy and prosperous condition, had he listened to the better counsels of the now afflicted partner of his troubles. A true-hearted wife is also our best friend in adversity, even when imprudence, incapacity, or even folly or perhaps our vices, have brought it upon us. Instead of reproaching him, she clings to and encourages him: her words of comfort and good cheer revive his hopes and his courage, and he is often able to retrieve his fortunes. At worst, with such a friend, he holds up his head, and grapples manfully the difficulties of his lot. His position in society may be more or less reversed; and those who flattered and looked up to him, may now pass him by coldly. A heartless world leaves him to his fate, or he may even be sneered at and frowned upon by those whom he once considered too mean and unworthy to be admitted to his society. However cold and heartless these, he is sure he has one dear friend; one bosom, one heart is true to him; that friend is the wife. After the toils of the day, after perhaps being buffeted off by those who were his sunshine friends, how reviving to his sinking spirits to mingle his soul with the dear one who has clung to him in weal and woe. What a cordial are her words of comfort, when all without is dark! In this hour of darkness, surely, she is to him God's messenger of mercy. While the true-hearted wife is all this and more to her husband, do we do well in all important matters not to consult so interested and faithful a friend? We repeat what we before said—the wife is our own safest and best adviser. The family is a little state! let those at the head of this little state mature all their plans by mutual, kindly, and wise counsels, and there will be fewer wrecks of the hopes of individuals and of families. Husbands, you will lose nothing, but gain much, by trusting more to that dearest and best of all earthly friends, the person whom you have selected from all the world to be your life-long companion. Sir Walter Scott, and the great Irish orator, Daniel O'Connell, at a late period of their lives, ascribed their success in the world principally to their wives. Were the truth known, theirs is the history of thousands.

WORDS TO WORKMEN.

No sensible person of the working (or any other) classes will envy the higher ranks the enjoyment of luxuries—champagne and the like; things which the best men of all ages have been without, many even by premeditation, and the awe of the deleterious effects of stimulants, &c. Neither can we begrudge the higher ranks their exemption from toil and labour—an assumption only gratuitous and exceptional, for who eats his bread more in the sweat of his brow than the wealthy or noble sportsman?—the traveller for science or art's sake in distant climes?—the over-worked and fagging statesman and financier? Or shall we envy them their spacious dwellings, knowing that Goethe (though not poor) mostly lived in one room, in which there was no sofa, and reposed in a small iron-framed bedstead? Or shall we envy them the slakeness and tidiness of their occupation, which they often perform without "wetting their feet?" This preference also will, on closer examination, be found illusory, considering, for instance, the dire occupation of medical men, work so ominous both physically and morally, that we will not dwell on it any further.

What working men may really envy the higher ranks for is, then, the quiet and orderly way in which they (mostly) perform their work; the quiet and comfort, in fine, they enjoy after that work is done Both, we say, are at the command of the working-men of the present time, if they chose to think, to reflect, and to act judiciously and prudently—essential attributes, after all, of humanity; and any one, in fact, who does not possess them, places himself forcibly out of that pale he still wills or means to reach. First, then, every person ought really to possess that qualification (profession) he eventually professes to be capable of. Do you wish to obtain the reward (wages) of skilled men? Be such, and then the world will belong to the courageous. We do not speak of that dogged courage of the battle-field, but that energy of life and exertion to which after all, we repeat, the world belongs. Will you possess the external rewards of the higher ranks of society; take them at once—by acquiring their internal stamina and impulses. Act judiciously, prudently, and with skill, and you will surely be raised, because it is a curious observation, that men (mostly) soon cease to do that work they perfectly and eminently are able to perform, and rise to that which is above it! Of course, this has its limits, the centripetal force controls the expansive one, and wisely ordained it is.

But let us reflect on the quiet and comfort the higher classes enjoy in their leisure hours at home; and so can the thinking human-like workman. It is not the range of rooms we may occupy which makes men happy, but the comfort of that one or two he actually uses and dwells in. That regularity, tidiness, systematicity which a sensible man displays in his work, he mostly transfers and conveys home. Clever men of all ranks have done wonders also in this respect. When the chemist Scheele had become famous all over the world, and visitors were anxious to see his laboratory, where he had made such great discoveries, he led them to a few shelves and cupboards of his room, a few furnaces placed outside the windows, when and wherewith all these grand things had been accomplished—all orderly, all tending and arranged for one purpose and end. The dwellings of the industrious classes have, of late, become a matter of States' attention in most parts of Europe. If working men will have respect for their places of abode, they will not hire any human-unworthy habitation. Surely architects and landlords will soon become aware and alive to that; and so also may be the internal arrangement of their dwellings—"the luxury of order, cleanliness, tidiness," &c. To conclude, the man who will prosper in life, must make himself capable of being prosperous.

INTRODUCTION OF VEGETABLES, FLOWERS, &c., INTO ENGLAND.

The advantages arising from the exploration of foreign regions are scarcely to be enumerated. To the discovery of America by the illustrious Columbus, we owe the introduction of that truly useful root, the potato. The pear, the peach, the apricot, and the quince, were respectively brought into Europe from Epirus, Carthage, Armenia, and Syria, and by degrees into England. Cherries are of very ancient date with us, being conveyed into Britain from Rome, A.D. 55. In the King of Saxony's museum, at Dresden, there is a cherry-stone, upon which, aided by a microscope, more than a hundred faces can be distinguished. Dr. Oliver was shown a cherry-stone in Holland with one hundred and twenty-four heads upon it; and all so perfect, that every one might be seen with the greatest ease by the naked eye. Melons were originally brought from Armenia. According to Mr. Andrews, fruit was very rare in England in the reign of King Henry VII.; that gentleman informs us that apples were then not less than one or two shillings each; a red rose, two shillings; and that a man and woman received eight shillings and fourpence for a small quantity of strawberries. Cabbages, carrots, &c., were introduced about the year 1547. Previous to this period, Queen Catharine of Arragon, first consort of Henry VIII., when she wanted a salad, was compelled to send to Holland or Flanders on purpose. About this time, apricots, gooseberries, pippins, and artichokes, were first cultivated. The currant-tree came from Zante, and was planted in England, A.D. 1533. Coss-lettuces were brought from the island of Cos, near Rhodes, in the Mediterranean. Asparagus, beans, peas, and cauliflowers, were introduced in the beginning of the reign of Charles II. Nor can we claim the jessamine, the lily, the tulip, &c. &c.; for the jessamine came from the East Indies; the lily and the tulip from the Levant; the tube-rose from Java and Ceylon; the carnation and pink from Italy; and the auricula from Switzerland. Thus it appears that nuts, acorns, crabs, and a few wild berries, were almost all the variety of vegetable food indigenous to our island.

SPIDER'S THREAD.

In the introduction to entomology, by Kirby and Spence, there is a very curious description of the process by which the spider weaves its web. After describing the four spinners, as they are termed, from which the visible threads proceed, the writer goes on to mention that these are the machinery through which, by a process more singular than that of rope-spinning, the thread is drawn. Each spinner is pierced, like the plate of a wire-drawer, with a multitude of holes, so numerous and exquisitely fine, that a space often not bigger than a pin's point includes above a thousand. Through each of these holes proceeds a thread of an inconceivable tenuity, which, immediately after issuing from the orifice, unites with all the other threads, from the same spinner, into one. Hence from each spinner proceeds a compound thread; and these four threads, at the distance of about one-tenth of an inch from the apex of the spinner, again unite, and form the thread we are accustomed to see, which the spider uses in forming its web. Thus, a spider's web, even spun, by the smallest species, and when so fine that it is almost imperceptible to our senses, is not, as we suppose, a single line, but a rope composed of at least four thousand strands. But to feel all the wonders of this fact, we must follow Leuwenhoek in one of his calculations on the subject. This renowned microscopic observer found, by an accurate estimation, that the threads of the minutest spiders, some of which are not larger than a grain of sand, are so fine that four millions of them would not exceed in thickness one of the hairs of his beard. Now we know that each of these threads is composed of above four thousand still finer. It follows, therefore, that above 16,000 millions of the finest threads which issue from such spiders are not, altogether, thicker than a human hair. It has long been a question among philosophers, whether it is possible to render the labours of the spider subservient to the benefit of mankind. In the earlier part of last century, Bon, of Languedoc, fabricated a pair of stockings and a pair of gloves from the threads of spiders. They were nearly as strong as silk, and of a beautiful grey colour. The predacious habits of these animals, however, would seem to oppose an effectual barrier to their being bred up in sufficient numbers to render such a manufactory at all productive. The following arguments against the probability of any permanent or real advantage resulting from this attempt, were published by Reaumur, whom the Royal Academy had deputed to inquire into the matter. The natural fierceness of spiders renders them unfit to be bred and kept together. Four or five thousand being distributed in cells, fifty in some, one or two hundred in others, the big ones soon killed and eat the smaller ones, so that in a short time there were scarcely above one or two left in each cell; and to this inclination of devouring their own species is attributed the scarcity of spiders, when compared to the vast number of eggs they lay. Reaumur also affirms that the web of the spider is inferior in strength and lustre to that of the silk-worm, and produces less of the material fit for use. The thread of the spider's web can only bear a weight of two grains without breaking; and the bag sustains the weight of thirty-six grains; the thread of a silk-worm will bear two drachms and a half, so that five threads of the spider are necessary to form a cord equal to that of a silk-worm, and as it would be impossible to apply these so closely together as to avoid leaving any empty spaces from which the light would not be reflected, the lustre would consequently be considerably less: this was noticed at the time the stockings were presented to the society by M. de la Hire. It was further observed, that spiders afford less silk than silk-worms, the largest bags of the latter weighing four grains, the smaller three grains,—so that 2,304 worms produce a pound of silk. The bags of a spider weigh about one grain; when cleared of the dust and filth, they lose about two-thirds of that weight. The work of twelve spiders, therefore, only equals that of one silk-worm; and a pound of silk will require at least 27,648 spiders. But as the bags are solely the work of the females, who spin them to deposit their eggs in, there must be kept 55,296 spiders to yield one pound of silk; and this will apply to the good ones only, the spiders in gardens barely yielding a twelfth part of the silk of the domestic kinds. Two hundred and eighty of them would not produce more than one silk-worm; and 663,555 such spiders would scarcely yield a pound of silk!

SHELL-FISH.

The life of a shell-fish is not one of unvarying rest. Observe the phases of an individual oyster, from the moment of its earliest embryo life, independent of maternal ties, to the consummation of its destiny, when the knife of fate shall sever its muscular chords, and doom it to entombment in a living sepulchre. How starts it forth into the world of waters? Not, as unenlightened people believe, in the shape of a minute, bivalved, protected, grave, fixed, and steady oysterling. No; it enters upon its career all life and motion, flitting about in the sea as gaily and lightly as a butterfly or a swallow skims through the air. Its first appearance is a microscopic oyster-cherub, with wing-like lobes flanking a mouth and shoulders unencumbered with inferior crural prolongations. It passes through a joyous and vivacious juvenility, skipping up and down, as if in mockery of its heavy and immoveable parents. It voyages from oyster-bed to oyster-bed, and, if in luck, so as to escape the watchful voracity of the thousand enemies that lie in wait, or prowl about to prey upon youth and inexperience, at length, having sown its wild oats, settles down into a steady, solid, domestic oyster. It becomes the parent of fresh broods of oyster-cherubs. As such it would live and die, leaving its shell, thickened through old age, to serve as its monument throughout all times—a contribution towards the construction of a fresh geological epoch, and a new layer of the earth's crust—were it not for the gluttony of man, who, rending this sober citizen of the sea from his native bed, carries him unresisting to busy cities and the hum of crowds. If a handsome, well-shaped, and well-flavoured oyster, he is introduced to the palaces of the rich and noble, like a wit, or a philosopher, or a poet, to give additional relish to their sumptuous feasts. If a sturdy, thick-back, strong-tasted individual, fate consigns him to the capacious tub of the street fishmonger, from whence, dosed with coarse, black pepper and pungent vinegar, embalmed partly after the fashion of an Egyptian king, he is tranferred to the hungry stomach of a costermonger.

STATISTICS OF WAR.

The battle of Waterloo lasted for about nine hours, and not more than 20,000 French were killed and wounded. We will suppose that only 5,000 of these were disposed of by the allied cavalry and artillery, and there will remain 15,000 as the results of infantry who were actually engaged on the side of the English, and that they had only expended on an average seventy-five cartridges per man—a most moderate allowance; for it is well known that the Rifles went into action with eighty rounds, and were twice supplied with ammunition during the day. The result will be, that it took the exertions of three English soldiers for nine hours, and the expenditure of two hundred and twenty-five musket shots to place one Frenchman *hors de combat!* Slow and tedious work this! And had not the Prussian army, according to promise, arrived in time to surround the French—reduced in numbers and exhausted by their protracted exertions—with an overwhelming force, this would have added one more to the long list of indecisive modern battles. But "the slaughter was tremendous." Well might it have been, when 70,000 French and 70,000 English had been engaged in the exchange of every species of missile for nine hours! But mark a contrast. At the battle of Prestonpans 2,500 undisciplined Highlanders, with broadswords and target, their advance covered by an unskilful fire of musketry, cut to pieces and dispersed in ten minutes a superior number of English infantry, armed and equipped exactly like the men who conquered at Blenheim and Malplaquet. The same result followed at Falkirk, and even at Culloden; with dissatisfaction and disobedience in their ranks, which prevented the first attack being supported and followed up, the Highlanders broke through every part of the English line that they reached in their charge.

JEFFERSON'S TEN RULES.

1. NEVER put off till to-morrow what you can do to-day.
2. Never trouble another for what you can do yourself.
3. Never spend your money before you have it.
4 Never buy what you do not want because it is cheap.
5 Pride costs us more than hunger, thirst, and cold.
6. We seldom repent of having eaten too little.
7. Nothing is troublesome that we do willingly.
8. How much pain the evils have cost us that have never happened.
9. Take things always by the smooth handle.
10. When angry, count ten before you speak; if very, angry a hundred.

MINOR MORALS FOR MARRIED PEOPLE.

THE last word is the most dangerous of infernal machines. Husband and wife should no more strive to get it than they would struggle for the possession of a lighted bomb-shell.

Married people should study each other's weak points, as skaters look out for the weak parts of the ice, in order to keep off them.

Ladies who marry for love should remember that the union of angels with women has been forbidden since the flood.

The wife is the sun of the social system. Unless she attracts, there is nothing to keep heavy bodies, like husbands, from flying off into space.

The wife who would properly discharge her duties, must never have a soul "above buttons."

Don't trust too much to good-temper when you get into an argument.

Sugar is the substance most universally diffused through all natural products! Let married people take a hint from this provision of Nature.

CHARACTERISTICS OF GREAT MEN.

TASSO'S conversation was neither gay nor brilliant. Dante was either taciturn or satirical. Butler was sullen or biting. Gray seldom talked or smiled. Hogarth and Swift were very absent-minded in company. Milton was unsociable and even irritable when pressed into conversation. Kirwan, though copious and eloquent in public addresses, was meagre and dull in colloquial discourse. Virgil was heavy in conversation. La Fontaine appeared heavy, coarse, and stupid; he could not speak and describe what he had just seen, but then he was the model of poetry. Chaucer's silence was more agreeable than his conversation. Dryden's conversation was slow and dull, his humour saturnine and reserved. Corneille, in conversation, was so insipid that he never failed in wearying. He did not even speak correctly that language of which he was such a master. Ben Jonson used to sit silent in company and suck *his* wine and *their* humours. Southey was stiff, sedate, and wrapped up in asceticism. Addison was good company with his intimate friends, but in mixed company he preserved his dignity by a stiff and reserved silence. Fox, in conversation never flagged; his animation and variety were inexhaustible. Dr. Bentley was loquacious. Grotius was talkative. Goldsmith wrote like an angel, and talked like poor Poll. Burke was eminently entertaining, enthusiastic, and interesting in conversation. Curran was a convivial deity, he soared into every region, and was at home in all. Dr. Birch dreaded a pen as he did a torpedo; but he could talk like running water. Dr. Johnson wrote monotonously and ponderously, but in conversation his words were close and sinewy; and if his pistol missed fire, he knocked down his antagonist with the butt of it. Coleridge, in his conversation, was full of acuteness and originality. Leigh Hunt has been well termed the philosopher of hope, and likened to a pleasant stream in conversation. Carlyle doubts, objects, and constantly demurs. Fisher Ames was a powerful and effective orator, and not the less distinguished in the social circle. He possessed a fluent language, a vivid fancy, and a well-stored memory.

RULES OF LIVING.

ADAPTED FROM THE GERMAN OF A. VON PLATEN.

1. Read frequently the following precepts; impress them carefully upon your mind, and let your purpose of living by them ever grow firmer and livelier, and let them be to you more inviolable than an oath.

2. Let your religion be that of sensible and reasonable men. Let it consist in faith in the goodness of the great all-pervading Spirit—in a Providence, whose guiding and directing presence is clearly manifested in all the events of your life.

3. Permit no doubt nor doubter to perplex you. It is neither possible nor conceivable that you, with human understanding, should be able to comprehend the Deity and the original creation of things, since you can survey only so small a part of the universe, and can perceive *that* only through the senses, and externally.

4. Communicate your principles only to those who are animated by similar views. You will convince no one who does not convince himself. The reformation of the world advances at a slow place; let time perform its work. All projects of sudden enlightenment have proved abortive.

5. Never engage in so-called religious disputes; break off such a conversation as soon as an opportunity of doing so is presented.

6. The idea of a Supreme Being will necessarily lead you to the belief of the spirit's immortality, without which life would be without meaning.

7. Neglect not the body, upon which your whole earthly existence depends. Inform yourself of what is beneficial, and what is pernicious to it. Despise it not; but on the other hand also consider what an inert, useless, and mouldering mass it is, as soon as it lacks life, its animating principle.

8. Let the object of your life be, improvement in what is good. All is good which contributes to the health of your own body and mind, and that of others.

9. For the perception of the good, a sincere desire is sufficient. But it is only by reflection and observation of ourselves, that we attain to that rapid penetration, and that nice power of distinction, which are so necessary in the manifold and complicated events of life.

10. Never lose sight of that aim of life, not even in little things. Believe that no action is so insignificant that some virtue may not be promoted by it. In bodily suffering and disagreeable occupations, exercise at least patience, of which man stands so much and so frequently in need, and which is the best safeguard against ill-humour.

11. The good man contributes to the welfare of others not alone by positive acts and instruction; but his life

resembles a fruit-bearing shade tree, by which each passer-by finds shelter and refreshment, which disinterestedly and even involuntarily scatters happy germs upon the surrounding soil, whereby it produces what is like and similar to itself.

12. Whatever you do, trust in Providence, and also in yourself. Both united, will extricate you from every dilemma, encourage you in every undertaking.

13. Should any misfortune threaten to plunge you into the deep gloom of despondency, stimulate your courage by an effort of resignation.

14. Shun no toil, as the wise Seneca says, to make yourself remarkable by some talent or other.

15. Yet do not devote yourself to one branch exclusively. Strive to get clear notions about all. Give up no science entirely, for science is but one.

16. Follow also the counsel of Garve; acquire the art and skill to render the whole man at least tolerable, although you may gain your real reputation in the world by a single part only. To a rational man this attainment is obligatory.

17. Let your watch-words be constant activity and daily contemplation of yourself and the ways of God. These will guard you against every false step.

18. Allow yourself, moreover, as much recreation as is needful for you, but not more, unless you would reap the reward of disagreeable feelings.

19. Force yourself in the evil hour to no labour, except it be a positive duty. Yet on the other hand, fly procrastination, which Young justly calls the thief of time. These rules have their exceptions, not likely to be mistaken.

20. Introduce changes in your reading and studies. Who reads but little at a time, retains that little the better.

21. Guard against reading too much or too rapidly. Read rather with attention; lay the book often down; impress on your mind what you have read, and reflect upon it.

22. Weigh every step that you are about to take, whenever your passions become involved. How often do things assume a different aspect, when they are fairly considered!

23. On the other hand, be prompt and decided in all that you have ascertained to be clear of doubt, irreproachable and in accordance with duty, and in which you can in no wise fear misconstruction.

24. Maintain your name blameless, and deliver it pure and stainless to posterity. Let no end induce a resort to questionable means.

25. In all things study moderation, a virtue more difficult than it appears, but more necessary than any other. Think not, however, that anything base can be ennobled by moderation.

26. Be prepared for the worst. Never let your sorrows get the mastery over you; conceal them always. Those things, says La Bruyére, which are most wished for, do not happen, or if they happen, it is not at the time and in the circumstances when they would have given the greatest pleasure.

27. Be always frank and true, and spurn every sort of affectation and disguise. Have the courage to confess your ignorance and awkwardness. Confide your faults and follies to but few.

28. Observe, hear, and be silent. Judge little, inquire much.

29. Be not deterred by unfavourable appearances, provided your intentions are good. Be not too proud to dissipate a prejudice that happens to attach to you, whenever it lies in your power. If it does not, entrench yourself within your virtue, as Horace says.

30. When low-spirited, remain rather alone. In company be as cheerful as possible. It is incredible to what an extent a gloomy and surly deportment can disfigure—how prepossessing cheerfulness is.

31. When you are in ill-humour, ask yourself seriously: What is the cause of my vexation? May it not be dispelled? What shall I do? In most cases an earnest effort will be successful.

32. Be punctual. Admit no disorder in your effects and papers. Look over

the latter from time to time, distroying those that are useless.

33. Appear rather too liberal than too economical, but never lavish. Economise in little things. Learn self-denial.

34. In a strait betwixt truth and falsehood, decide unhesitatingly for the truth. Candour is always essential.

35. Be strictly on your guard against the risings of anger. Never vent your displeasure against those who cannot or dare not retort.

36. Restrain your self-will. An opportunity will not be wanting for exhibiting your firmness. Banish obstinacy, however.

37. Let your repentance be a lively will, a firm resolution Complaints and mourning over past errors avail nothing, without a determination to amend them.

38. When you wake in the morning, think over the day. Endeavour to look at the bright side, though unpleasant business lies before you.

39. Keep a journal, the utility of it is manifold, as is also the pleasure. Make it, however, a point of duty to be rigidly candid. Let it not be to you merely a remembrancer, but a means of self-knowledge.

40. Preserve purity of mind under all circumstances. Guard against the follies of love. Allow due importance to first impressions, but do not let yourself be carried away by them. Study physiognomy in different persons, but not in those for whom you begin to feel affection, for in that case it will assuredly mislead you. Shun all self deception. Accustom yourself to esteem only inward and acknowledged worth, and to regard exterior rather as a snare for your freer judgment. Do not delude yourself by fine sounding words, by self created idols.

41. It is particularly necessary that you should be master of your thoughts. Difficult as it may be not to indulge one's darling ideas, be determined nevertheless to strive against them. Should they intrude themselves during your walks, take a book with you and read with attention. But read something that will change the tone of your mind, not Pastor Fido, which would only make it worse.

42. Attend scrupulously to the duties which your situation imposes on you.

43. Take a benevolent interest in all that concerns humanity and its progress, as well as the welfare of individuals. Be sensible to the claims of all.

44. Let the judgment of the multitude make you reflect, but never despair.

45. Do not imagine that every person who lays claim to your sympathy at the first moment, is made to be your friend, for experience contradicts it.

46. Be the more confiding with your known friends. Do everything for them that lies in your power. For Pope was right in saying, that when we deduct what others feel and think, our joys sicken and fame sinks. Let no threats, no fate, induce you to forsake your friends.

47. Trust them, for without confidence never do two persons really get near to each other. On the other hand keep sacred not only every secret confided to you, but also every word not proper for all to hear.

48. *Never read other people's papers, letters, or journals, that happen to lie in your way.*

49. See your friends neither too often nor too seldom.

50. Promise little, particularly in small matters, but keep your promises in spite of all hindrances. Do not place reliance in the promises of those whom you do not well know.

51. Better trust too much than mistrust. Believe not with La Rochefoucault and his followers, that all men and all their words and actions are regulated simply by their interest, if indeed you deem yourself capable of a disinterested action.

52. Epistolary correspondence is as pleasant as it is profitable, but do not extend it so far as to make it burthensome.

53. Be more polite to inferiors than to superiors.

A JOURNEY OF DISCOVERY ALL ROUND OUR HOUSE.

JOURNEY FIFTH.

PRIMITIVE HOUSES OF MAN—DWELLINGS OF THE BRITONS, ANGLO-SAXONS, AND NORMANS.

IN this our fifth Journey of Discovery it is our intention to investigate the construction of that fabric which is to the body what the physical body is to the soul, the house or dwelling of the social man. And as our previous journeys have been devoted to inquiries into the organization and laws by which we live, and move, and have our being—a subject sublime in its wondrous unity, and full of interest and instruction in its slightest detail,—we trust to render our new theme, though reft of the grandeur and dignity of the former, equally worthy of our fellow-traveller's attention, and, by combining interest with information, assist to fulfil the intention with which these tours of discovery were undertaken; namely, to impart to the reader a general knowledge of the organization and mechanism by which those combined functions, to which we give the name of life, are carried on; and lift the mind in love and gratitude to that Beneficence that has made man "the beauty of the world, the paragon of animals."

Next to protecting his defenceless body by some suitable apparel, one of the earliest instincts of man seems to have been directed to provide a place of shelter against the heat of the sun and the inclemency of the seasons. Comfortless and rude as man's primitive habitations were, they were in many instances so simple, easy of construction, and so adequate to the requirements and exigencies of the family or tribe, that though many thousands of years have elapsed since their first construction, and the wants and necessities of mankind have greatly increased with the diffusion of intelligence, it is a singular fact that, in many instances, his dwellings at the present moment differ little from the rude prototypes which necessity ages ago compelled him to construct; and in the low tent of the nomadic Arab, the cane hut of the South African, and the snow house of the arctic wanderer, we probably look upon fac-similes of the dwellings which, at the first migration of the human family, man, in the dawn of creation, built for his shelter and protection.

During the two thousand years that these islands have had an extant history the domestic architecture of the people has undergone five distinctive epochs of change;—first under the Romans; then under the Saxons; thirdly, after the Norman invasion; and lastly, in the sixteenth and seventeenth centuries under the Tudors and Stuarts.

The habitations of the native Britons, when the country first fell under the lustful ambition of Cæsar, half a century before the Christian era, were, as may be supposed from the rude manners and warlike habits of its painted inhabitants, primitive and simple in the extreme, except indeed among the chiefs or men of substance, who having horses and cattle required an enclosure for their animals, and a permanent residence within the stockade for the use of themselves and families.

Cæsar seems to have been struck by the similarity of these British buildings with those of the Gauls on the other side of the Channel; the only perceptible difference being, that while those in Gaul had circular roofs slightly dome-shaped, those of the Britons were high and conical, like an extinguisher, and usually more than twice the altitude of the house they roofed.

So exactly similar were all these dwellings, that a brief account of one will answer for a description of all. The houses of the ancient Britons consisted of a mere circular wall of upright posts and stakes, with wattles interlaced with reeds, boughs, or any pliant material to exclude the weather; the whole being erected on a circle of large stones as a foundation; the roof thatched with straw, rushes, or grass, and the whole securely bound with withes, after the fashion of a haystack. A low, arched door led directly to the interior, a circular apartment that served for every purpose of the family; a fire in the centre of the earthen floor answering the double object of cooking the food and affording warmth to the inmates, who at night spread their straw round the embers, and, indifferent to the damp earth or hard bed, slept in peace, if not in luxury. An opening at the apex of the conical roof permitted the escape of the smoke, and left but little space for the entrance of the rain. A circular enclosure of stakes and binders, with an entrance facing the door, swept round the house, and embraced as much ground as the extent of the owner's stock required.

If the chiefs and men of property were so badly lodged, we can easily conceive what wretched habitations those of the poor and dependent must have been, a mere shed of uprights, thatched with leafy branches, and the sides filled up with reeds and furze. These hovels, to which a modern waggon-lodge would have appeared a palace, sufficed, however, for the hardy race, who defended their rude homesteads with the courage of heroes. While the domestic architecture of the Briton betrayed a total disregard of ingenuity, comfort, or beauty, he could expend taste, skill, and constructive powers on those ecclesiastical buildings which, to this day, are the wonder and astonishment of Europe—the Druidical temples of Stonehenge and Abury.

The Romans, who were not only colonizers but civilizers wherever they planted their eagles, not only taught the Britons all the arts of peace and agriculture, but by example, encouragement, and even public rewards, inculcated a taste for architecture, both domestic and ecclesiastical, but more particularly the former; and such apt scholars did the Britons soon become, that their reputation as architects extended even to Rome itself. In the four centuries of Roman supremacy in this country they covered the island with temples, villas, military roads, and many works of abiding interest and importance; they found London a village of straggling hovels, flanked by a river and backed by a dense forest, and left it a handsome city, with baths, temples, market-places, and lines of stately streets, a worthy capital for a rising nation. This proud state of progressional civilization, of internal peace and social harmony, which had taken four hundred years to perfect, was overthrown as by magic; and a darkness and barbarism as complete and savage as that from which they had been rescued by the Romans fell like a moral eclipse on the unfortunate Britons; the country rifled of its youth and fighting men, drawn off to swell the legions that on the Tiber vainly sought to uphold the dying mistress of the world; and the rest of the inhabitants, totally unused to war, offered, in their defencelessness, their teeming fields, their lowing herds, and aspect of general plenty, a tempting prize to those barbarians of the North who lived on mutual rapine and plunder. The Picts burst like a resistless ocean over the undefended wall of Antoninus, and spread murder, havoc, and desolation over the fruitful land. To drive back those ruthless hordes the hunted Britons called in the aid of the warlike Saxon, and then, for four centuries, succeeded a darkness like that of Egypt, and an ignorance and savagery so profound, that the very memory of its former peace and happiness was rooted from the traditions of the persecuted inhabitants.

Under the Anglo-Saxons the domestic architecture of the people assumed a more substantial and seemly style, the circular and conical houses of the Britons gave place to square structures, with slanting roofs and projecting eaves; and if the comfort of the people was not materially improved by the change of shape and size of the dwellings, some show of decency was at least preserved. The houses were constructed of larger masses of timber, were more strongly built, and loam or clay was brought into requisition to fill up the interstices between the wattles and uprights, and form walls to the building. Instead of one room for cooking, sleeping, and eating, the house was divided into two,—a small one called the chamber, the sitting-room by day of the mistress, her maids, and children; and the dormitory by night of the master and his family: the large room or hall, as it was called, with the fire on the ground, and a hole in the roof for the escape of the smoke, was still the kitchen, refectory, and reception-room for visitors; and where the guests and servants at night spread their straw and slept in common. A long kind of bench or covered box, raised on a narrow dais, and placed against the wall opposite the door—which hospitality demanded should be always open,—was the place of honour, where the master sat or reclined; a heavy square settle or chair, with a few three-legged stools, formed the only other articles of furniture or accommodation for the inmates or guests. Sheds for horses and cattle, with a few other offices, were situated at the back of the house. All these were improvements, and especially that of plastering the walls; so liable were they to crack and break away, and so impossible was it to exclude cutting draughts, that even in the ninth century, in a royal residence, Alfred the Great had to tax his ingenuity, and design the first lantern made to protect his time-measuring candles from the flaring waste of the wind. In time the necessities of the family required more accommodation, and either a top story was added to the existing building, or a new house was built with a story above; this, like the lower part, was divided into two unequally sized apartments,—one large room over the hall, called the *solar*, and a smaller room, sometimes used as an oratory, at others as a sleeping apartment, when it was denominated *the chamber*, and set aside for some esteemed or highly honoured guest. Whether the solar was built with the house, or added to an existing edifice, it was invariably reached by an outside stair or ladder, which, for the double object of privacy and security, could be drawn up after the guest had taken possession of the solar. This radical alteration in the form of the house led to another most important change, the erection of chimneys: for unless a hole had been cut through the floor of the solar to correspond with that in the roof, there would have been no means of escape for the smoke from the central hall fire. This alteration necessitated the removal of the fire to the side of the house, and the building a flue of brick or stone to run through the top story, and admit of a fireplace there as well as in the hall. In time these unseemly vents became enclosed by jambs and lofty mantelpieces, and the rere-dosse, a square or octagonal elevation above the hearth, composed of close-fitting bricks or flags, on which the fire was made, with the fire-dogs or andirons, as a natural consequence, rapidly followed. Indeed, the farmhouse fireplace of the present day, without the many items of comfort and necessity then unknown, affords us a good—indeed, exact—example of the English domestic hearth in the eleventh century, when William promulgated his tyrannous edict,—that at the ringing of the vesper bell, eight o'clock, every fire and light should be extinguished. At that once holy, but then dreaded sound, the housewife pushed back the burning embers of her fire up to the wall, and covering the whole with her Dutch-oven-looking curfew, in a few moments effectually extinguished her fire, and often her only light. Then God help the poor wretch who dared to be sick or suffering during the night, or who, trusting to the Conqueror's sympathy, presumed to light his glimmering cruse.

With the Normans came the stone keeps, castelets, and imposing castles of the invader, with a cluster of wooden houses at their base; in which, as under the wing of the mighty chief, gathered his serfs, dependants, and retainers. As these increased in number and importance, stockades at first, and eventually walls, were built from the base of the castle round all the outlying structures. Not to extend the walls too far so as to weaken the defences, timber, being plentiful, cheap, and easy of transport, was used liberally to raise the existing buildings by one or two additional and overlapping stories; thus a baronial dependency that had contained only a few hundred inhabitants, by this system of economizing space, was made to harbour as many thousands. In this manner those large cities, such as Norwich, Lincoln, and many others, formed the nucleus of that municipal power which subsequently made them too great for the nobles who thought themselves their masters.

With the baronial halls of the Tudors, where safety gave way to comfort and luxury, and the settled times allowed a man to think of his ease and enjoyment before his life or property, we shall not pause further than to observe that the prodigal waste of wood that for more than a thousand years had been going steadily on in the country—many a homestead consuming more timber than would have built a modern line of battle ship,—had so exhausted the once immense woods and forests of Britain, that it had become necessary to find some substitute for building purposes other than wood; for hitherto contractors had robbed the forests of their noblest members, and nothing but oak of the finest growth would satisfy their need. Firewood too had become so scarce, or what was equivalent, so dear, that, with a new material for building, a new article for fuel became an imperative necessity.

Those two wants occurring nearly together led to one of the greatest revolutions in domestic architecture that the country had yet seen—the erection of brick or stone houses instead of wooden ones, and the substitution of coal for cord-wood and charcoal for fires.

Taking the domestic dwellings as we now find them, advanced in the process of centuries from the bent boughs of the aborigines, the wicker-work sheds and mud-plastered wattles of the Briton and Anglo-Saxon, through the progression of the Norman and the Tudor, to the time when such men as Inigo Jones and Sir Christopher Wren gave a new impetus to domestic life and social enjoyment, and passing onwards to the nineteenth century, we shall, with these prefatory remarks, begin in earnest our Journey of Discovery round the House.

GARDENING FOR AUGUST.

The Flower Garden.—This is a month of corrections, alterations, and general supervision, rather than of cultivation. Pansies should be propagated by cuttings, seedlings planted out in new beds, while those flowers meant for showing should be carefully shaded. Remove pelargoniums from large pots, trim their roots, and set out in smaller pots; all the pipings of pinks which have struck should be planted out this month into nursery beds, or into their permanent beds, to be left for flowering. Rich loam and dung make the best soil for these pipings, which should be planted in beds four feet wide, with a clear space every way of six inches for each setting. Fuchsias, petunias, verbenas, and all sorts of half-hardy clump plants are still to be propagated by cuttings. At the same time all kinds of perennials must be attended to by cuttings or by parting of their roots, and all those herbaceous plants which have done blooming, should, in like manner, have their roots parted. All biennials that are large enough, Canterbury-bells, two-year stocks, wallflowers, sweet williams, picotees, pinks, carnations, polyanthuses, &c., if not attended before, should be now planted out in beds, or where they are to bloom. Auriculas should be protected from excessive heat or wet, but at the same time giving them all the air possible. The propagation for next season must be commenced this month, particularly such plants as do not root freely. Attend to the mowing, sweeping, and rolling of your garden, and keep the edges of all the beds neat and well defined.

The Kitchen Garden.—This is also a busy month among the vegetables both in sowing, trimming, and destroying insects. Potatoes must be well looked after, and carefully weeded. Cabbage seed should be sown after a wet day, for the spring and summer crops; the main winter crop of spinach should also be sown at this time. Remove the dead leaves and unnecessary shoots of cucumber, and protect the plant from cold winds; earth up celery and hoe between all kinds of crops; top beans in blossom, and earth those that are up sufficiently high for the purpose. Trim strawberries of unnecessary runners, clear their beds. Onions which have nearly reached their growth should be bent down so as to confine the sap to the bulb. Watch the neighbourhood of choice fruit trees, as well as the trees themselves, for insects, which are particularly hurtful at this season; tobacco smoke is a convenient means of exterminating them. Watch for snails and slugs on wall fruit, and remove them. Finally, inspect your vines, remove all redundancy of wood, and thin out the clusters of grapes.

CROQUET.

The game is played on a level, closely-mown lawn, which should be often rolled, so as to make the ground solid. The implements comprise ten bridges, which are made of pieces of iron rod, sharpened at both ends, and bent in the middle into the form of staples, with a span of about twelve inches. Eight mallets, the heads of which should be four inches long, with a circumference at each end of seven inches, tapering to the middle; the shanks or handles should be perfectly straight, and the total length of the mallet thirty inches. Two stakes, either wood or iron, are also required, but must not exceed two feet in length; the portion out of the ground may be coloured in rings to match the balls. Eight balls, which should be made of a light wood that will not readily split, ten inches in circumference, and each ball painted of a different colour.

The game may be played by any number of players, but becomes long, and may prove tedious if there are more than eight engaged. Having selected the ground and arranged the boundaries, the first thing to be done is to place the stakes and bridges, which is managed in this way:—a stake called the foot-stake is driven in, say ten feet from the boundary which forms the base of operation, and then another called the head-stake is driven ten feet from the boundary in the opposite side, and a string made fast from one stake to the other; then at the distance say of ten feet from each stake, a bridge should be placed, using the string as a centre, and at another interval of ten from, and in a line with each bridge, another bridge; then from the centre of the string, and equidistant from it, and from the boundary on each side, plant two more bridges, that is, one on each side of the string, and equidistant from each side boundary; then on each side of, and in a line with, the two bridges last planted, place two more bridges at intervals of ten feet. You will thus have ten bridges, four of which are in a line with the stakes, that is, two for each stake, and three on each side, with a space of ten feet between each bridge, which will give a distance between each stake of sixty feet; the end boundaries being ten feet from each stake, and the side boundaries rather more than ten feet from the bridges on each side.

Having arranged your bridges and stakes, you then proceed to choose partners or sides for playing. Two leaders are first chosen, who each choose one partner in succession. The leaders use the balls which correspond in colour with the two first rings on the stakes, and as the partners are chosen, they take the colours of the next rings. If there are eight players, two sets of partners of four in each set may be formed, or four sets of two each. If only seven, the game may still be played as if there were eight, one of the players taking two balls and having two turns of play. If there are six, the game may be played with two sets of three each, or three sets of two each. If only five, then by one player using an extra ball; the game may be played as if there were six. When there are four players, there may be two sides of two each, with single balls, or of four each wich two balls to each player. Three may play the game of four, by one taking two balls, or of six by each taking two balls. When only two play, each uses two balls and plays them alternately.

Before the play commences you must decide upon the place from whence the balls must first be played; this should be between the foot-stake and the nearest bridge—two and a half feet from the stake.

In playing, the object is to propel the ball through all the bridges by blows from the mallet, going through the two bridges nearest the foot-stake first, then cornering and passing through the three bridges on the left side from the starting point; then cornering again and passing through the two bridges nearest the head-stake, striking the stake, and again passing the bridges downwards; then cornering again, and passing through the three bridges on the right, cornering again, and passing through the first two bridges and striking the starting stake; whoever succeeds in doing this first is the victor.

The players on each side take their turn of play alternately, the leaders taking precedence, and each player continuing as long as he makes a point; the points are *when the ball runs its proper bridge, strikes the head-stake, makes a roquet or a ricochet, or a croquet or roquet-croquet.* The failure to do any of these ends its turn, and it must remain at the mercy of other players till the turn comes round again. A ball is also put out of play (for that turn) when (without intervening play) it strikes a ball which has been previously roqued, ricochet, or croqued. If in the act of croquet the player's ball flinch from under his foot, it is out of play for that turn; and if (when the croquet is refused) the roqued ball is displaced in playing, a like penalty follows. A player may decline his turn of play, or at any time leave it unfinished.

The bridges can be passed only in the proper direction—by a blow from the mallet, by roquet, ricochet, concussion, croquet, or roquet-croquet. To pass a bridge the ball must be clear of it. If a ball after having passed through a bridge strike any obstacle, and rebound back again through the bridge, the passage has still been effected. If from a blow of the mallet the ball strike any obstacle and rebound through its proper bridge, the passage is effected.

Terms used in the Game.

Roquet.—A ball makes roquet when, after being struck with the mallet, it comes in contact with another ball.

Croquet.—When a ball has been croqued, the player takes his own ball up and places it close to the roqued ball, pressing one foot on it so as to hold it firm, and then with a blow of the mallet drives the roqued ball in the direction he wishes; this method of croqueting or cracking the balls gives the title to the game.

Roquet-croquet is when the croquet is made on the roqued ball, without using the foot, and both balls are driven away.

Ricochet is when a ball makes roquet on more than one ball from one blow of the mallet.

Concussion is when a ball is displaced by one that has been driven against it by roquet, croquet, ricochet, or roquet-croquet, and not by the playing ball.

Nursing is roquing or croquing a ball, either of your own or the opposite parties, so as to increase or lessen its chance of success.

Booby, a ball that has not succeeded in passing the first bridge after being struck.

Rover, a ball that has passed under all the bridges but not struck the foot stake.

HISTORY OF BOOK-KEEPING.

Book-keeping may be defined as that systematic arrangement of commercial transactions by which the true state of the proprietor's concerns may be easily ascertained; thus, at once exhibiting correct and ready information of every particular in trade, and the general result of the whole, in point of profit or loss.

Like most other valuable sciences, the date of its origin is extremely uncertain. Some of those authors who are always zealous companions for the ancients, and will hardly allow any meritorious improvements in science due to the moderns, have contended that *double entry* was known by the Romans; but even admitting the ancients *did* arrange their accounts in the debtor and creditor method, still this implies no more than *single entry*. Commerce was then in a very rude and imperfect state, and consequently it is extremely probable that nothing more was requisite; but the most weighty objection to this opinion is, that the ancient languages afford *no terms correspondent to the modern technical phrases of double entry;* and Snellius, when he translated "Stevens's Book-keeping" into Latin, after the most scrutinous research for such terms in vain, was compelled to *coin* them; thus he called the art itself, *Apologistica;* the Waste Book, *Liber Deletitius;* the Ledger, *Codex accepti expensique;* Stock, *Sors;* Balance *Epilogismus*, &c.

Indeed the terms adopted in most of the European languages appear to be derived immediately from the *Italian*, with the exception of the English word *Ledger*, which has exhibited as much variation in the orthography as it has occasioned disputes about its etymology;—it was formerly spelt Leager, Leadger, Leidger, Leiger, Leger, and lastly Ledger—its name in the Italian and southern languages of Europe implies the master book; in the German and other northern provinces the head book; and in the Dutch and French the grand book. As to its derivation, Bailey refers it to the Latin verb *legere*, to gather: but Dr. Johnson says, it is so from the Dutch *leggen*, to continue in one place; while some others again have conjectured it arose from the *liege* books of the feudal ages, which recorded the rents, duties, and services due from the liege men (or tenants).

Having thus advanced the arguments *pro* and *con.*, as to the claims of the *ancients* to a knowledge of this art, I proceed to submit some conjectures in favour of the *moderns;* perhaps it is not at all improbable that the principle of double entry was suggested by the double purpose of bills of exchange, and the ordinary way of entering them; these we know are decidedly a modern invention, or it might possibly have been deduced from some of Euclid's axioms, or by the operations of algebraic equations; in support of the last opinion the following circumstance is remarkably apposite:—

Lucas de Borgo, an Italian friar, was the first who translated Algebra from the Arabic into any of the European languages: he was one of the earliest writers on several other mathematical subjects, and is generally supposed to have composed the first express treatise on this science. It was published in his native language (the Italian) in 1495, which is nearly the most distant period to which we can with certainty trace back the origin of book-keeping; and thus much for the claims of the *moderns* for this invention. Let the reader settle the point in dispute.

Assuming then the prior part of the fifteenth century (as has been already remarked) to be the origin of this science, I now endeavour to follow its progress in this country: and although the southern parts of Europe were acquainted with book-keeping by the Italian manner at the above-mentioned period, it appears that the knowledge was diffused but slowly; for we find nothing of it in England till 1543, when the first English work on this subject was published at London, by Hugh Oldcastle, a school-master, which was much improved, and reprinted by John Mellis (also a school-master) in 1588. The curious reader may find some account of this work in "Aymes's Antiquities of Typography," where a copy of the title is thus given:—"A briefe instructione and maner howe to kepe bookes of accomptes partible, &c., by three bookes, named yᵉ memoriall, jornall, and leager.—Newley augmented and sette forthe by John Mellis, scholo maister of London:—imprynted by hime at yᵉ signe of yᵉ White Beare, nighe Baynard's Castel, 1588."

The *next* treatise of which we have any account, was by James Poole; and this was also published in London, in 1569: in his preface, he says, "though long practised in foreign parts, this art was but then *new* in England!"

This work was succeeded in 1652 by a considerably improved system, in a large treatise by John Collins, a very celebrated mathematician, whose publication served as a standard book nearly a century.

These were the principal early English writers on this art, during the first two centuries since its introduction to this country; which again received much improvement, in a well-known popular work, published 1736, by John Mais, a professor of mathematics at Perth; from this period numerous were the authors upon this subject, but they followed each other so closely, both in manner and matter, that very little benefit arose from their productions; to give a list would be tedious, but the most approved of them are Dodson, Donn, Dowling, Dilworth, Crosby, Cooke, Hamilton, Hatton, London, Miers, Malcolm, Stevens, Snell, Webster, Wood, &c., whose treatises all appeared from 1720 to 1770.

Hitherto the writers upon book-keeping were all teachers, and although as such, they were competent to explain the principles, they had not the means of practically proving their theories; and, consequently their works were but an indifferent preparative for the counting-house. This defect was supplied in 1789, by a judicious and elaborate work by Benjamin Booth, a merchant, whose treatise has enabled later authors to combine the theory and elementary precepts of the instructor with the improvements resulting from actual mercantile experience; so that in modern works the former has gone hand in hand with the latter.

Before concluding the subject, it may not be amiss to mention the prospectus of a plan published in 1796, to rival the Italian mode, called "The English Book-keeping," by a Mr. Jones; who, therein, boldly represented "the Italian system as delusive and erroneous," and announced his own as an *infallible* plan by *single* entry.

Under the sanction of some eminent names as recommenders, subscriptions at a guinea each were raised to the enormous sum of nearly £7,000!

Public impatience was very great for the appearance of the work, which was somehow delayed much beyond the appointed time, and many considered the whole as a hoax; at last, however, it came forth, and completely disappointed public expectation. Several pamphlets attacking Mr. Jones's book appeared, and produced others as warm in its defence; thus causing some controversy between the partizans of the old and new system; at length, a gentleman of the name of Mill gained the triumph of the Italian over the English mode, and formed a due comparison of their respective claims, by arranging the whole of Mr. Jones's work into a Journal and Ledger by double entry.

DEATH.

As the word Life is employed in a double sense to denote the actions or phenomena by which it is developed, and the cause of these phenomena, so the old English word Death is used familiarly to express two or more meanings. The first of these is the transition from the living to the lifeless or inanimate state—the act, that is, of dying; the second, the condition of an organised body which has ceased to live, while organisation yet remains, and symmetry still displays itself, and the admirable structure of its parts is not yet destroyed by decomposition, or resolved into the original and primary elements from which it was moulded,

"Before Decay's effacing fingers
Have swept the lines where beauty lingers."

We occasionally speak of "dead matter" in the sense of inorganic; but this is merely a rhetorical or metaphorical phrase. That which has never lived cannot properly be said to be dead.

In the following essay I shall use the word chiefly in the first of the senses above indicated. It will often be convenient to employ it in the second also; but in doing so I will be careful so to designate its bearing as to avoid any confusion. The context will always prevent any misunderstanding on this point.

Death may be considered physiologically, pathologically, and psychologically. We are obliged to regard it, and speak of it, as the uniform correlative, and, indeed, the necessary consequence, or final result of life; the act of dying as the rounding off, or termination, of the act of living. But it ought to be remarked, that this conclusion is derived, not from any understanding or comprehension of the relevancy of the asserted connexion, nor from any *à priori* reasoning applicable to the inquiry, but merely *à posteriori* as the result of universal experience. All that has lived has died; and, therefore, all that lives must die.

The solid rock on which we tread, and with which we rear our palaces and temples, what is it often when microscopically examined, but a congeries of the fossil remains of innumerable animal tribes! The soil from which, by tillage, we derive our vegetable food, is scarcely anything more than a mere mixture of the decayed and decaying fragments of former organic being; the shells and exuviæ, the skeletons and fibres and exsiccated juices of extinct life.

The earth itself, in its whole habitable surface, is little else than the mighty sepulchre of the past; and

> "All that tread
> The globe are but a handful to the tribes
> That slumber in its bosom. Take the wings
> Of morning, and the Barcan desert pierce,
> Or lose thyself in the continuous woods
> Where rolls the Oregon, and hears no sound
> Save his own dashings—yet, the dead are there;
> And millions in these solitudes, since first
> The flight of years began, have laid them down
> In their last sleep: the dead reign there alone."

Four millions of Egyptians cultivate the valley of the great river on whose banks, amidst the fertilising dust of myriads of their progenitors, there are calculated still to exist, in a state of preservation, not less than from four hundred to five hundred millions of mummies. The "City of the Tombs" is far more populous than the neighbouring streets even of crowded Constantinople; and the cemetries of London and the catacombs of Paris are filled to overflowing. The trees which gave shade to our predecessors of a few generations back lie prostrate; and the dog and horse, the playmate and the servant of our childhood are but dust. Death surrounds and sustains us. We derive our nourishment from the destruction of living organisms, and from this source alone.

And who is there among us that has reached the middle term of existence, that may not, in the touching phrase of Carlyle, "measure the various stages of his life-journey by the white tombs of his beloved ones, rising in the distance like pale, mournfully receding milestones?"

"When Wilkie was in the Escurial," says Southey, "looking at Titian's famous picture of the Last Supper in the refectory there, an old Jeronymite monk said to him, 'I have sat daily in sight of that picture for now nearly threescore years; during that time my companions have dropped off one after another—all who were my seniors, all who were my contemporaries, and many or most of those who were younger than *myself*; more than one generation had passed away, and there the figures in the picture have remained unchanged. I look at them, till I sometimes think that *they* are the realities, and *we* but shadows.'"

I have stated that there is no reason known to us why Death should always "round the sum of life." Up to a certain point of their duration, varying in each separate set of instances, and in the comparison of extremes varying prodigiously, the vegetable and animal organisms not only sustain themselves, but expand and develope themselves, grow and increase, enjoying a better and better life, advancing and progressive. Wherefore is it that at this period all progress is completely arrested; that thenceforward they waste, deteriorate, and fail? Why should they thus decline and decay with unerring uniformity upon their attaining their highest perfection, their most intense activity? This ultimate law is equally mysterious and inexorable. It is true the Sacred Writings tell us of Enoch, "whom God took, and he was not;" and of Elijah, who was transported through the upper air in a chariot of fire; and of Melchizedek, the most extraordinary personage whose name is recorded, "without father, without mother, without descent: having neither beginning of days, nor end of life." We read the history without conceiving the faintest hope from these exceptions to the universal rule. Yet our fancy has always exulted in visionary evasions of it, by forging for ourselves creations of immortal maturity, youth, and beauty, residing in Elysian fields of unfading spring, amidst the fruition of perpetual vigour. We would drink, in imagination, of the sparkling fountain of rejuvenescence; nay, boldly dare the terror of Medea's cauldron. We echo, in every despairing heart, the ejaculation of the expiring Wolcott, "Bring back my youth!"

Reflection, however, cannot fail to reconcile us to our ruthless destiny. There is another law of our being, not less unrelenting, whose yoke is even harsher and more intolerable, from whose pressure Death alone can relieve us, and in comparison with which the absolute certainty of dying becomes a glorious blessing. Of whatever else we may remain ignorant, each of us, for himself, comes to feel, realise, and know unequivocally that all his capacities, both of action and enjoyment, are transient, and tend to pass away; and when our thirst is satiated, we turn disgusted from the bitter lees of the once fragrant and sparkling cup. I am aware of Parnell's offered analogy—

> "The tree of deepest root is found
> Unwilling most to leave the ground;"

and of Rush's notion, who imputes to the aged such an augmenting love of life that he is at a loss to account for it, and suggests, quaintly enough, that it may depend upon custom, the great moulder of our desires and propensities; and that the infirm and decrepit "love to live on, because they have acquired a habit of living." His assumption is wrong in point of fact. He loses sight of the important principle that old age is a relative term, and that one man may be more superannuated, further advanced in natural decay at sixty, than another at one hundred years. Parr might well rejoice at being alive, and exult in the prospect of continuing to live, at one hundred and thirty, being capable, as is affirmed, even of the enjoyment of sexual life at that age; but he who has had his "three sufficient warnings," who is deaf, lame, and blind; who, like the monk of the Escurial, has lost all his contemporaries, and is condemned to hopeless solitude, and oppressed with the consciousness of dependence and imbecility, must look on Death not as a curse, but a refuge. Of one hundred and thirty-three suicides occurring in Geneva from 1825 to 1834, more than half were above fifty years of age; thiry-four, from fifty-five to sixty; nineteen, from sixty to seventy; nine, from seventy to eighty; three, from eighty to ninety; in all, sixty-five. The mean term of life in that city being about thirty-five to forty, this bears an immense proportion to the actual population above fifty, and exhibits forcibly an opposite condition of feeling to that alleged by Rush, a weariness of living, a desire to die, rather than an anxiety, or even willingness to live.

I once knew an old man, of about one hundred and four, who retained many of his faculties. He could read ordinary print without glasses, walked firmly, rode well, and could even leap with some agility. When I last parted with him, I wished him twenty years more; upon which he grasped my hand closely, and declared he would not let me go until I had retracted or reversed the prayer.

Strolling with my venerable and esteemed colleague, Professor Stephen Elliott, one afternoon, through a field on the banks of the river Ashley, we came upon a negro basking in the sun, the most ancient-looking personage I have ever seen. Our attempts, with his aid, to calculate his age, were, of course conjectural; but we were satisfied that he was far above one hundred. Bald, toothless, nearly blind, bent almost horizontally, and scarcely capable of locomotion, he was absolutely alone in the world, living by permission upon a place, from which the generation to which his master and fellow-servants belonged had long since disappeared. He expressed many an earnest wish for death, and declared emphatically, that he "was afraid God Almighty had forgotten him."

We cannot wonder that the ancients should believe, "Whom the gods love, die young," and are ready to say, with Southey himself, subsequently, like poor Swift, a melancholy example of the truth of his poetical exclamation,

> "They who reach
> Grey hairs die piecemeal."

Sacred history informs us, that, in the infancy of the world, the physiological tendency to death was far less urgently and early developed than it is now. When the change took place is not stated; if it occurred gradually, the downward progress has been long since arrested. All records make the journey of life, from the time of Job and the early patriarchs, much the same as the pilgrim of to-day is destined to travel. Threescore and ten was, when Cheops built his pyramid, as it is now, a long life. Legends, antique and modern, do indeed tell us of tribes that, like Riley's Arabs and the serfs of Middle Russia, and the Ashantees and other Africans, live two or three centuries; but these are travellers' stories, unconfirmed. The various statistical tables that have been in modern times made up from materials more or less authentic, and the several inquiries into the general subject of longevity, seem to lead to the gratifying conclusion that there is rather an increase of the average or mean duration of civilised life. In 1806, Duvillard fixed the average duration of life in France at twenty-eight years: in 1846, Bousquet estimated it at thirty-three. Mallet calculated that the average life of the Genevese had extended ten years in three generations. In Farr's fifth report (for 1844), the "probable duration," the "expectation of life" in England, is placed above forty, a great improvement within half a century. It is curious, if it be true, that the extreme term seems to lessen as the average thus increases. Mallet is led to this opinion from the fact, among others, that in Geneva, coincident with the generally favourable change above-mentioned, there has not been a single centenarian within twenty-seven years; such instances of longevity having been formerly no rarer there than elsewhere.

Birds and fishes are said to be the longest lived animals. For the longevity of the latter, ascertained in fish-ponds, Bacon gives the whimsical reason that, in the moist element which surrounds them, they are protected from exsiccation, of the vital juices, and thus preserved. This idea corresponds very well with the stories told of the uncalculated ages of some of the inhabitants of the bayous of Louisiana, and of the happy ignorance of that region, where a traveller once found a withered and antique corpse — so goes the tale — sitting propped in an arm-chair among his posterity, who could not comprehend why he *slept* so long and so soundly.

But the Hollanders and Burmese do not live especially long; and the Arab, always lean and wiry, leads a protracted life amidst his arid sands. Nor can we thus account for the lengthened age of the crow, the raven, and the eagle, which are affirmed to hold out for two or three centuries.

There is the same difference among shrubs and trees, of which some are annual, some of still more brief existence, and some almost eternal. The venerable oak bids defiance to the storms of a thousand winters; and the Indian baobab is set down as a contemporary at least of the Tower of Babel, having tolerably braved, like the more transient, though long-enduring olive, the very waters of the great deluge.

It will be delightful to know—will Science ever discover for us—what constitutes the difference thus impressed upon the long and short-lived races of the organised creation? Why must the fragrant shrub or georgous flower-plant die immediately after performing its function of continuing the species, and the pretty ephemeron languish into non-existence just as it flutters through its genial hour of love, and grace, and enjoyment; while the banyan, and the chesnut, the tortoise, the vulture, and the carp, formed of the same primary material elements, and subsisting upon the very same resources of nutrition and supply, outlast them so indefinitely?

Death from old age, *from* natural

decay — usually spoken of as death without disease — is most improperly termed by writers an euthanasia. Alas! how far otherwise is the truth? Old age itself is, with the rarest exceptions, exceptions which I have never had the good fortune to meet with anywhere—old age itself is a protracted and terrible disease.

During its whole progress, Death is making gradual encroachments upon the domain of life. Function after function undergoes impairment, and is less and less perfectly carried on, while organ after organ suffers atrophy and other changes, unfitting it for the performance of offices to which it was originally designed. I will not go over the gloomy detail of the observed modifications occurring in every part of the frame, now a noble ruin, majestic even in decay. The lungs admit and vivify less blood; the heart often diminishes in size, and always acts more slowly, and the arteries frequently ossify; nutrition is impeded, and assimilation deteriorated; senile marasmus follows, "and the seventh age falls into the lean and slippered pantaloon;" and last, worst of all, the brain, and indeed the whole nervous tissue, shrink in size and weight, undergoing at the same time more or less change of structure and composition. As the skull cannot contract on its contents, the shrinking of the brain occasions a great increase of the fluid within the subarachnoid space. Communication with the outer world, now about to be cut off entirely, becomes limited and less intimate. The eyes grow dim; the ear loses it aptitude for harmony, and soon ceases to appreciate sound; odours yield no fragrance; flavours affect not the indifferent palate; and even the touch appreciates only harsh and coarse impressions. The locomotive power is lost; the capillaries refuse to circulate the dark, thick blood; the extremities retain no longer their vital warmth; the breathing slow and oppressed, more and more difficult, at last terminates for ever with a deep expiration. This tedious process is rarely accomplished in the manner indicated without interruption; it is usually, nay, as far as my experience has gone, always brought to an abrupt close by the supervention of some positive malady. In our climate this is, in the larger proportion, an affection of the respiratory apparatus, bronchitis, or pulmonitis. It will, of course, vary with the original or constitutional predisposition of the individual, and somewhat in relation to locality and season. Many aged persons die of apoplexy and its kindred cerebral maladies; not a few of diarrhœa; a winter epidemic of influenza is apt to be fatal to them in large numbers everywhere.

When we regard death pathologically, that is, as the result of violence and destructive disease, it is evident that the phenomena presented will vary relatively to the contingencies effective in producing it. It is obviously out of place here to recount them, forming as they do a vast collection of instructive facts, the basis of an almost separate science, Morbid Anatomy.

There are many of the phenomena of death, however, that are common to all forms and modes of death, or are rarely wanting; these are highly interesting objects of study themselves, and assume a still greater importance when we consider them in the light of signs or tokens of the extinction of life. It seems strange that it has been found difficult to agree upon any such signs short of molecular change or putrefactive decomposition, that shall be pronounced absolutely certain, and calculated entirely to relieve us from the horrible chance of premature interment of a body yet living. The flaccidity of the cornea is dwelt on by some; others trust rather to the *rigor mortis*, the rigid stiffness of the limbs and trunk supervening upon the cold relaxation which attends generally the last moments. This rigidity is not understood or explained satisfactorily. It is impossible that, as Matteucci has proved, the changes in all the tissues, chiefly chemical or chemico-vital, are the source from whence is generated the "nervous force" during life; so, after death the similar changes, now purely chemical, may, for a brief period, continue to generate the same or a similar force, which is destined to expand itself simply upon the muscular fibres, in disposing them to contract. There is a vague analogy here with the effect of galvanism upon bodies recently dead, which derives some little force from the fact that the bodies least disposed to respond to the stimulus of galvanism are those which form the exceptions to the almost universal exhibition of rigidity—those, namely, which have been killed by lightning, and by blows on the pit of the stomach. Some poisons, too, leave the corpse quite flaccid and flexible.

The researches of Dr. Bennett Dowler, of New Orleans, have presented us with results profoundly impressive, startling, and instructive. He has, with almost unequalled zeal, availed himself of opportunities of performing autopsy at a period following death of unprecedented promptness, that is, within a few minutes after the last struggle, and employed them with an intelligent curiosity and to admirable purpose.

I have said that, in physiological death, the natural decay of advancing age, there is a gradual encroachment of death upon life; so here, in premature death from violent diseases, the contrasted analogy is offered of life maintaining its ground far amidst the destructive changes of death. Thus, in cholera asphyxia, the body, for an indefinite period after all other signs of life have ceased, is agitated by horrid spasms, and violently contorted. We learn from Dr. Dowler that it is not only in these frightful manifestations, and in the cold stiffness of the familiar *rigor mortis*, that we are to trace this tenacious muscular contraction as the last vital sign, but that in all, or almost all cases, we shall find it lingering, not in the heart, anciently considered in its right ventricle the *ultimum moriens*, nor in any other internal fibres, but in the muscles of the limbs, the biceps most obstinately. This muscle will contract, even after the arm with the scapula has been torn from the trunk, upon receiving a sharp blow, so as to raise the forearm from the table, to a right angle with the upper arm.

We also learn from him the curious fact that the generation of animal heat, which physiologists have chosen to point out as a function most purely vital, does not cease upon the supervention of obvious or apparent death. There is, he tells us, a steady development for some time of what he terms "post-mortem caloricity," by which the heat is carried not only above the natural or normal standard, but to a height rarely equalled in the most sthenic or inflammatory forms of disease. He has seen it reach 113° of Fahr., higher than Hunter ever met with it, in his experiments made for the purpose of exciting it; higher than it has been noted even in scarlatina; 112°, I think, being the ultimate limit observed in that disease of pungent external heat; and far beyond the natural heat of the central parts of the healthy body, which is 97° or 98°. Nor is it near the centre, or at the trunk, that the post-mortem warmth is greatest, but, for some unknown reason, at the inner part of the thigh, above the lower margin of its upper third. I scarcely know any fact in nature more incomprehensible or inexplicable than this. We were surprised when it was first told us, that, in the Asiatic pestilence, the body of the livid victim was often colder before than after death; but this I think is easily understood. The profluvia of cholera, and its profound capillary stagnation, concur in carrying off all the heat generated, and in preventing or impeding the development of animal heat. No vital actions, no changes necessary to the production of caloric, can proceed without the minute circulation which has been checked by the asphyxiated condition of the subject, while the fluids leave the body through every outlet, and evaporation chills the whole exposed and relaxed surface. Yet the lingering influence of a scarcely perceptible vitality prevents the purely chemical changes of putrefactive decomposition, which commence instantly upon the extinction of this feeble resistance, and caloric is evolved by the processes of ordinary delay.

In the admirable liturgy of the churches of England and of Rome, there is a fervent prayer for protection against "battle, murder, and sudden death." From death uncontemplated, unarranged, unprepared for, may Heaven in mercy deliver us! But if ever ready, as we should be for the inevitable event, the most kindly mode of infliction must surely be that which is most prompt and brief. To die unconsciously, as in sleep, or by apoplexy, or lightning, or overwhelming violence, as in the catastrophe of the Princeton, this is the true Euthanasia. "Cæsar," says Suetonius, "finem vitæ commodissimum, repentinum inopinatumque præstulerat." Montaigne who quotes this, renders it, "La moins préméditée et la plus courte." "Mortes repentinæ," reasons Pliny, "hoc est summa vitæ felicitas," "Emori nolo," exclaims Cicero, "sed me esse mortuum nihil estimo."

Sufferers by various modes of execution were often, in the good old times of our merciless ancestors, denied as long as possible the privilege of dying, and the Indians of North America utter a fiendish howl of disappointment when a victim thus prematurely escapes from their ingenious malignity. The *coup de grace* was a boon unspeakably desired by the poor wretch broken on the wheel, or stretched upon the accursed cross, and forced to linger on with mangled and bleeding limbs, amidst all the cruel torments of thirst and fever, through hours and even days that must have seemed interminable.

The progress of civilisation, and a more enlightened humanity, have put an end to all these atrocities, and substituted the gallows, the garrotte, and the guillotine, which inflict deaths so sudden that many have questioned whether they necessarily imply any consciousness of physical suffering. These are, however, by no means, the most instantaneous modes of putting an end to life and its manifestations. In the hanged, as in the drowned and otherwise suffocated, there is a period of uncertainty, during which the subject is, as we know, recoverable; we dare not pronounce him insensible. He who has seen an ox "pithed" in the slaughter-house, or a game cock in all the flush and excitement of battle "gaffed" in the occiput or back of the neck, will contrast the immediate stiffness and relaxation of the flaccid body with the prolonged and convulsive struggles of the decapitated bird, with a sort of curious anxiety to know how long and in what degree sensibility may linger in the head and in the trunk when severed by the sharp axe. The history of the guillotine offers many incidents calculated to throw a doubt on the subject, and the inquiries of Seguret and Sue seem to prove the existence of post-mortem passion and emotion.

Among the promptest modes of extinguishing life is the electric fluid. A flash of lightning will destroy the coagulability of the blood, as well as the contractibility of the muscular fibre; the dead body remaining flexible. A blow on the epigastrium kills instantly, with the same results. Soldiers fall sometimes in battle without a wound; the impulse of a cannon-ball passing near the pit of the stomach is here supposed to be the cause of death. The effect in these last two instances is ascribed by some to "a shock given to the semilunar ganglion, and the communication of the impression to the heart;" but this is insufficient to account either for the quickness of the occurrence, or the peculiar changes impressed upon the solids and fluids, Others are of opinion that the whole set of respiratory nerves is paralysed through the violent shock given to the phrenic, "thus shutting up," as one writer expresses it, "the fountain of all the sympathetic actions of the system." This hypothesis is liable also to the objections urged above; and we must acknowledge the suddenness and character of the results described to be as yet unexplained, and in the present state of our knowledge altogether inexplicable.

On the field of battle, it has been observed that the countenances of those killed by gun-shot wounds are usually placid, while those who perish by the sword, bayonet, pike, or lance, offer visages distorted by pain, or by emotions of anger or impatience. Poisons differ much among themselves as to the amount and kind of suffering they occasion. We know of none which are absolutely free from the risk of inflicting severe distress. Prussic acid gives perhaps the briefest death which we have occasion to observe. I have seen it, as Taylor states, kill an animal, when applied to the tongue or the eye, almost before the hand which offered it could be removed. Yet in the case of Tawell, tried for the murder of Sarah Hart, by this means, there was abundant testimony that many, on taking it, had time to utter a loud and peculiar scream of anguish: and in a successful attempt at suicide made by a physician of New York city, we have a history of appalling suffering and violent convulsion. So I have seen in suicide with opium, which generally gives an easy and soporose death resembling that of apoplexy, one or two instances in which there were very great and long-protracted pain and sickness.

Medical writers have agreed, very generally, that "the death-struggle," "the agony of death," as it has long been termed, is not what it appears, a stage of suffering. I am not satisfied—I say it reluctantly—I am not satisfied with these consolatory views, so ingeniously and plausibly advocated by Wilson, Philip, and Symonds, Hufeland, and Hoffman. I would they were true! But all the symptoms look like tokens or expressions of distress; we may hope that they are not always such in reality: but how can this be proved? Those who, having seemed to die, recovered afterwards and declared that they had undergone no pain, do not convince me of the fact any more than the somnambulist, who upon awaking, assures me that he has not dreamed at all, after a whole night of action, and connected thought, and effected purpose. His memory retains no traces of the questionable past; like that of the epileptic, who forgets the whole train of events, and is astonished after a horrible fit to find his tongue bitten, and his face and limbs bruised and swollen.

Nay, some have proceeded to the paradoxical extreme of suggesting that certain modes of death are attended with pleasurable sensations, as for instance, hanging; and a late reviewer, who regards this sombre topic with a most cheerful eye, gives us instances which he considers in point. I have seen many men hung, forty at least—a strangely large number. In all, there were evidences of suffering, as far as could be judged by external appearances. It once happened that a certain set were slowly executed, owing to a maladroit arrangement of the scaffold upon which they stood, which gave way only at one end. The struggles of such as were half supported were dreadful, and those of them who could speak earnestly begged that their agonies should be put an end to.

In former, nay, even in recent times, we are told that pirates and robbers have resorted to half hanging to extort confession as to hidden treasure. Is it possible that they can have so much mistaken the means they employ as thus to use pleasurable appliances for the purposes of torture?

The mistake of most reasoners on the subject, Winslow and Hufeland more especially, consists in this, that they fix their attention exclusively upon the final moments of dissolution. But the act of dying may be in disease, as we know it to be in many modes of violence, impalement for example, or crucifixion, very variously protracted and progressive. "Insensibly as we enter life," says Hufeland, "equally insensibly do we leave it. Man can have no sensation of dying." Here the insensibility of *death completed*, that is, *of the dead body*, is strangely predicated of the moribund while still living. This transitive condition, to use the graphic language of the American writer whom we have already more than once quoted, is "a terra incognita, where vitality, extinguished in some tissues, smouldering in others, and disappearing *gradually* from all, resembles the region of a volcano, whose eruptions subsiding, leave the surface covered with cinders and ashes, concealing the rents and seams which have on all sides scarred and disfigured the face of nature."

Besides this, we have no right to assume, as Hufeland has here done, the insensibility of the child at birth. It is subject to disease before birth; as soon as it draws a breath, it utters loud cries and sobs. To pronounce all its actions "mechanical, instinctive, necessary, automatic," in fact, is a very easy solution of the question; but I think neither rational nor conclusive. If you prick it or burn it, you regard its cries as proving sensibility to pain; but on the application of air to its delicate and hitherto protected skin, and the distension of its hitherto quiet lung, the same cry you say is mechanical and inexpressive. So Leibnitz explained, to his own satisfaction, the struggles and moans of the lower animals as automatic, being embarrassed with metaphysical and moral difficulties on the score of their intelligence and liability to suffering. But no one now espouses his theory, and we must accept, whether we can explain them or not, the facts that the lower animals are liable to pain during their entire existence, and that the heritage of their master is, from and during birth to the last moment of languishing vitality, a sad legacy of woe and sufferings.

But I recoil from further discussion of a topic so full of awe and solemn interest, and conclude this prosaic "Thanatopsis" with the Miltonian strain of Bryant:

"So live, that, when thy summons comes to join
The innumerable caravan, that moves
To the pale realms of shade, where each shall take
His chamber in the silent halls of death,
Thou go not like the quarry slave at night,
Scourged to his dungeon; but, sustained and soothed
By an unfaltering trust, approach thy grave;
Like one who wraps the drapery of his couch
About him, and lies down to pleasant dreams."

Things Lost for Ever.—Lost wealth may be restored by industry—the wreck of health regained by temperance.

A CHAPTER ON NAMES.

(*See* page 218.)

"What's in a name?"

Love is a sophist, and the implied but false answer to Juliet's impassioned query is, "Nothing!" Nothing? Everything, rather, in thy case, O "White dove of Verona!"—enough at least to raise a barrier between thee and the Romeo of thy heart-worship, which even love cannot surmount! Such, it seems to me, is the teaching of Shakspere, in the play; and the world's experience confirms it.

The ancient Greeks attached great importance to names. Plato recommends parents to be careful to give happy ones to their children; and the Pythagorians taught that the minds, actions, and success of men were according to the appellations which they bore. The Romans seem to have been equally impressed with the same idea. *Bonum nomen bonum omen*, became a popular maxim among them. To select *bona nomina* was always an object of solicitude, and it was considered quite enough to damn a man that he bore a name of evil import. Livy, speaking of such an appellation, calls it *abominandi ominis nomen*. A similar belief prevailed among all the nations of antiquity. It embodied a truth which has not yet lost its significance and importance. To a man with the name of Higgins or Snooks, no amount of talent or genius is of any avail. He cannot possibly raise himself above a very humble sphere of usefulness. Or let an unfortunate biped have attached to him the appellation of Gotobed, a name which has been borne by many a worthy individual, and he may quite innocently sleep all day! His waking efforts can effect nothing to elevate him to any position of honour or distinction. He bears about him the doom of everlasting mediocrity." John is a most excellent name, and Smith is a surname which is worthy of respect and honour, but woe to the man on whom they are conjoined! For John Smith to aspire to senatorial dignities or to the laurel of the poet is simply ridiculous. Who *is* John Smith? He is lost in the multitude of John Smiths, and individual fame is impossible.

All names were originally significant, and were always bestowed by the ancients with reference to their well-understood meaning. Sometimes they were commemorative of some incident or circumstance connected with the birth of the individual bearing them: as, Thomas, *a twin;* Maius, *May* (applied to one born in that month); Septimus, *the seventh.* In other cases they were expressive of the aspirations, desires, or hopes of the parents: as, Victor, *one who conquers;* Probus, *truthful;* Felix, *happy;* Benedict, *blessed.* Not unfrequently they were descriptive of personal qualities: as Macros, *tall;* Pyrrhus, *ruddy;* Rufus, *red-haired.*

Names are as significant now as they were in the days of Plato, and as important, but we ignorantly or carelessly misapply them, making of them the most absurd misnomers. "A man with the name of George or Thomas," as Leigh Hunt very justly observes, "might as well, to all understood purposes, be called Spoon or Hat-band!" Blanche is now anything but the flaxen-haired *blonde* which her name indicates. Isabel is no longer *brown.* Cecilia (*grey-eyed*) belies her name, and "lets fly the arrows of love" from orbs of heavenly blue. Rebecca, who ought to be somewhat *embonpoint,* "rounded into beauty," as the poet hath it, is perhaps a slender, lily-like maiden, better suiting the name of Susan. As thus misapplied, our personal nomenclature is worse than meaningless. We should deem the person either hopelessly insane or unpardonably ignorant, who should, in science or in business, thus misuse well-understood terms.

We are not disposed to enter the domain of the abstract, and show that there is an inherent fitness in names for persons and things; a correspondence between the word-symbol and the object which it was originally intended to represent, intuitively recognised by the soul, though perhaps not fully comprehended. Our design is a more practical one.

Ada is well known as the name of Byron's only daughter. It is from the Saxon (*Edith, Eadith,* or *Eade, Ada*), and signifies *happy.*

"Is thy face like thy mother's, my fair child,
Ada?"

Adelaide is of German derivation, and has the meaning of a *princess.*

"A little maid,
Golden-tressed *Adelaide.*"

Adeline is only a different form of the same name.

"What aileth thee? whom waitest thou,
With thy soften'd, shadow'd brow,
And those dew-lit eyes of thine,
Thou faint smiler, Adeline?"

Agatha, *good,* is from the Greek. To be worthy of this name, indicative as it is of all the virtues, is an object which may well enlist the highest ambition of the fair ones who bear it, whether maidens or wives.

Agnes, *chaste,* is also from the Greek, and is one of the best names in use among us. None but pure, gentle, and loving beings, it would seem, should bear it; but in one case, at least, it has belonged to one in whom the heroic predominated over every gentle sentiment: *Black Agnes,* of Dunbar, who, as the reader of history will recollect, kept her husband's castle, like a lioness, against his enemies:

"Twine ye roses, for the brow
Of the lady of my vow,
My Agnes fair!"

Alfred is Saxon, and signifies *all-peace.* It is a good name, and should be a favourite among us, boasting as we do of our Saxon descent, and tracing some of our free institutions to the great and good king who bore it "in the olden time."

Alicia, or Alice, is from the Latin, and has the meaning of *noble.* It is one of the sweetest of our female names:

"Oh that I were beside her now,
Oh! will she answer if I call?
Oh! would she give me vow for vow,
Sweet Alice, if I told her all?"

Alphonso is said to be the Spanish form of the ancient Gothic *Elfans, our help.* It is a euphonious name, but is now seldom used. Byron damned it to everlasting ridiculousness in one of his inimitable rhymes:

> "Ungrateful, perjured, barbarous Don Alphonso,
> I really wonder how you can go on so!"

Amelia, or Amelie (French, Aimée), signifies *beloved.* Amy, or Amie, and Emily, have the same derivation and meaning. Our vocabulary contains no sweeter or more *loveable* name. Happy is she who bears a name pregnant with such sacred significance, and happy the man who is privileged to whisper it in her ear as the highest word of endearment. Amiée, beloved! The reader will recollect, in connection with this name, that dark page in the romance of history which records the sad fate of Amy Robsart.

Anna, or Annie (Hebrew, Hannah), signifies *kind* or *gracious.*

Arabella (French, Arabelle) is of Latin derivation, and has the meaning of *beautiful altar.* Before no place of sacrifice bend devouter worshipper:

> "Bella, *Arabella*, belle,
> Fairer than my verse can tell
> Well
> I love thee, *Arabelle*—
> *Belle!*"

Augustus, *increasing*, is from the Latin, and signifies that those who originally bore it continually grew in power and honour. It has been a favourite name in kingly and princely palaces, but princes have no monopoly of it. Its feminine form is Augusta.

Baldwin, a *bold winner*, is a fine name of the old Saxon stock.

Barbara is of Latin derivation, and signifies *strange* or *foreign.* Its mention recalls to our minds the melancholy fate of Jemmy Grove, of ballad memory, who died at Scarlet Town of a broken heart (poor fellow!),

> "For love of Barbara Allen!"

Basil, *kingly*, is of Greek origin. It can hardly be a popular name in these republican times.

Beatrice is *one who blesses* or *makes happy.* Blessed (Benedict) is he on whom she smiles. No name can be more appropriate for a lovely and affectionate woman. Dante immortalised it, and Shakspere and Shelley have thrown around it the charm of their numbers. It is derived from the Latin. Why is it not more frequently used?

Benjamin, *son of the right hand*, is a fine old Hebrew name, and has been borne by men of renown, among whom were Jonson and Franklin.

Bertha, *bright* or *famous*, is a fine name of Greek origin, and should be more common.

Bianca is the Italian form of Blanche, which, as I have already hinted, has the meaning of *white* or *fair.* It is a sweet name in both forms, and should be fittingly bestowed.

Calista, from the Greek, is *beautiful.*

Catherine, or Katharine, derived from the Greek, is *pure* or *chaste*, and is one of the best of our female names. In the Irish it becomes Kathleen, and in the Flemish, Kateline. A pretty diminutive of Catherine is Katharina; but I like it best in its familiarised form of Kate. Who ever knew a Kate who was not frolicsome, mischievous, and saucy? What says the poet?

> "Kate's a sweet but saucy creature,
> With a lip of scarlet bloom;
> Woodbines sipping golden sun-light,
> Roses drinking rich perfume;
> Voice as dainty as the whisper
> Founts give in their crystal shrine:
> Saucy Kate, so full of mischief,
> Would that I could call thee mine!"

The shrew-taming Petruchio, in the play, thus harps upon the name:—

> "You are called plain Kate,
> And bonny Kate, and sometimes Kate the cross:
> But Kate, the prettiest Kate in Christendom,
> Kate of Kate-Hall, my super-dainty Kate,
> For all *cates* are dainties."

The name of Catharine, disgraced by her of Medici, was honoured by the noble but unfortunate queen of Henry VIII., whom the pen of a Shakspere and the voice of a Siddons have immortalised.

Charles: some etymologists derive

this illustrious name from the German *kerl*; Anglo-Saxon *ceorl* or *churl*; a term denoting rusticity, and quite opposed to every idea of nobility. Its real origin may probably be found in the Sclavonic *krol*, a king. Thus: Krol, Korol, Karolus, Carolus, Charles. Krol may have come from the Latin *corona* or *corolla*, a crown. Charles, then, is a king, or one who is crowned. This seems an appropriate signification for a name which has been borne by so many kings and emperors. Charles sometimes occurs in this country in the Spanish form, Carlos. Charlotte is one of the feminine forms of Charles, and, if we accept the foregoing etymology, signifies *a queen*. Those who derive the name from the German, give it the signification of *prevailing*. I have no quarrel here with the etymologist. All Charlottes may be queens of love, and being queens must prevail over the hearts of men. Charlotte Corday will be remembered as one not unworthy of so brave a name. But

> "My Charlotte conquers with a smile,
> And reigneth queen of love!"

In the home-circle and among her companions, Charlotte lays aside her queenship, and becomes gentle Lottie. Caroline is the feminine of Charles, in another form, and of course has the same meaning as Charlotte. It is another noble and queenly name, and has been borne by many a noble woman. Caroline assumes the familiarised or pet forms of Carrie, Callie, Caro, and Cal.

> "Oh! a thing of earth, but half divine,
> Is she, my fair young Caroline!"

Clara, *clear* or *bright*, is from the Latin. It is a very pretty name, and is immortalised in one of the best of Scott's novels, "St. Ronan's Well." Clarissa is from the same root, as is Claribel, *bright* and *beautiful*:—

> "Diamonds bright shall Clara wear,
> Woven 'mid her shining hair."

Daniel, *a judge*, is from the Hebrew.

David, also from the Hebrew, signifies, *well beloved*.

Deborah, signifying *a bee*, is another good but rather homely name from the Hebrew stock.

Earine, *vernal*, a name immortalised by Ben Jonson, should certainly be revived.

Edward is a *truth-keeper*. The name is of Saxon derivation, and is surrounded by rich historical associations. Its French form is Edouard.

Edwin, *happy winner* (*bonum nomen bonem omen*,) is also from the Saxon.

Eleanor (Fr., Eleonore) is of Saxon derivation, and signifies *all-fruitful*.

> "Eleanor,
> A name for angels to murmur o'er!"

Emma, *tender*, *affectionate* (literally, one who nurses, cares for, watches over another), is of German origin. Who could desire his mother, his sister, or his beloved, to bear a sweeter or a better name? Under the form of Imma it was honoured by Charlemagne's fair daughter, whose love-history, in connection with Eginhard, her father's secretary, forms one of the prettiest episodes in the chronicles of the time. Emmeline is simply a diminutive of Emma.

Erasmus is from the Greek, and signifies *worthy to be loved*.

Ernest, *ernest*, is derived from the German. Its feminine form is Ernestine.

Eugene, *nobly descended*, is of Greek derivation. In the feminine, in which it ought to be oftener used, we give it the form of Eugenia.

Everard is a good name from the German stock, and has the meaning of *well-reported*.

Francis is of German origin, and signifies *frank* and *free*. It is one of our finest names. Frances, of which Fanny is the familiarised or pet form, is the feminine.

Frederick, *rich peace*, is another German name of historical importance. Frederick, the grenadier King of Prussia, was not particularly well named.

George, *a farmer*, is from the Greek. It should be a very common name in agricultural communities. It has been borne by kings, and by one, at least, who was greater than any king—

Washington. Georgia, Georgette, and Georgiana, are its feminine forms.

Gertrude is from the German, and, according to the etymology usually given, signifies *all-truth;* but Jung-Stilling, in his Pneumatology, gives it a very different meaning. Speaking of the Druids, he says:—"Into this mysterious, spiritual order, old women were also received, who, by this means, attained to considerable rank, and became priestesses. Such individuals then received the title of *Haxa*—Druidess. Both these names were, at that time, honourable appellations; they are now the most disgraceful terms of reproach. The name of Gertude, or Gertrudis, is probably also derived from this source, and ought reasonably to be disused, for it has the same meaning as the word *haxa* or *hexe, a witch.*" Well, this may be true, for Gertrudes are generally very *bewitching.*

Grace, *favour,* is from the Latin. Well may it be a favourite name. Commend to me the Graces:

> "You may toast your charming Sue,
> Praise your Mary's eyes of blue,
> Choose whatever name you will
> Your fancy or your verse to fill:
> In my line no name has place,
> But the sweetest one of Grace."

Helen (Latin, Helena; French, Helene) is of Greek origin. The true signification of it seems to be one of those *vexatæ questiones* which abound in etymological discussions. According to one it has the meaning of *alluring;* another makes it signify *a taker,* or *one who seizes;* while a third defines it as *one who pities.* I am inclined to endorse the last. Many a poor unfortunate lover has found Helen *alluring,* and has finally been taken, *seized,* conquered by the *prestige* of her bright eyes and sweet voice. Happy is he who finds her *one who pities,* for pity is akin to love. Ellen is only a different form of the same name. It is often contracted to Nellie and Nell, and is a fine name in all its forms.

Henry, *rich lord,* is of German derivation. It has been borne by many kings, noblemen, and patriots. In its familiarised form it becomes Harry. Its feminizations are Henrietta, Henrica, and Harriet, who, since they cannot be rich lords, should be rich ladies.

Isabel (French, Isabelle; Spanish, Isabella) signifies *olive-complexioned,* or *brown.* This is just the name for a "bonny brunette;" for such a one as the poet praises when he sings:

> "Give me the brown girl, with a bright sunny glow!"

There is a silvery, bell-like music in the name, which is exceedingly attractive, and which has made it a favourite with the poets. One says:—

> "Full many maidens' names there be,
> Sweet to thee,
> Fair to me,
> And beautiful exceedingly;
> But none on my ear so sweet doth swell
> As the name of mine own "Isabel!"

Mary Howitt, in her "Flower Comparisons," has the following melodious lines:—

> "Now for madcap Isabel:
> What shall suit her, prythee tell!
> Isabel is brown and wild;
> Will be evermore a child!
> Is all laughter, all vagary,
> Has the spirit of a fairy.
>
> * * * *
>
> Isabel is short and brown,
> Soft to touch as eider-down,
> Tempered like the balmy South,
> With a rosy, laughing mouth;
> Cheeks just tinged with peachy red,
> And a graceful Hebe-head;
> Hair put up in some wild way,
> Decked with the hedge-rose's spray.
> Now, where is the bud or bell
> That may match with Isabel?"

James (in the French, Jacques; Spanish, Jayme; Italian, Giacomo; Scotch, Jamie) comes from the old Hebrew stock, and is generally supposed to be the same as Jacob, and to signify a supplanter.

John is generally supposed to be from the Hebrew, and to signify *gracious:* but Talbot traces it, as he thinks, to the Latin *juvenis, a young man.* In the Italian, it is Giovanni; in the Spanish, Juan; and in the French, Jean. It has been borne by some of the greatest men that the world has ever produced. It was the name of Milton, Hampden, Locke, Dryden, Howard, Molière, Boccaccio, Hancock, Adams, Calhoun. Shakespere bestowed it upon one of his best characters, the fat knight who was wont to subscribe himself, "Jack Falstaff with my familiars; John with my brothers and sisters; and *Sir John* with the rest of Europe." The name is a great favourite with the very respectable and somewhat numerous family of Smiths; and probably the most noted of all the Johns, ancient or modern, is John Smith. The commonness of the name is the only valid objection to it. It has ceased to be sufficiently distinctive, and one sympathizes with the lament of an unfortunate bearer of the ancient and honoured but much-abused name:

"Why did they call me John, I say,
Why did they call me John?
It's surely just the meanest name
They could have hit upon!
Because my father had it too,
And suffered for the same,
Is that a proper reason he
Should propagate the name?"

The English are prone to convert John into Jack, and the Scotch into Jock, neither of which is either elegant or genteel.

Judith, from the Hebrew, signifies *praising*.

Julius, *soft-haired*, is of Latin origin. Julia, Julietta, Juliet, and Julianna are feminizations of Julius, and should wear on their queenly heads "soft and silken tresses." Julia needs no eulogist, since she is one whom the poets have immortalized. Julietta, or Juliet, is a diminutive of Julia; "but has," as Talbot remarks, "apparently united itself with another name, Joliette, the diminutive of *jolie, pretty*."

Letitia, *joy*, is one of the happiest as well as the sweetest of names. The woman we love should be "a joy for ever" to our hearts. It is a good old Roman name.

Leonard is from the German, and signifies *lion-like*.

Mabel is probably from *ma bella, my fair*, though some think it a contraction of *amabilis, lovely* or *amiable*. The fair ones who bear it have no reason to complain of either derivation.

Madeleine, (Syriac, Magdalene), *magnificent*, is a noble name, and a favourite with the poets. It often occurs in the French form of Madeleine:—

"Thou art not steeped in golden languors,
No tranced summer calm is thine,
Ever varying Madeleine!"

Margaret, *a pearl*, is from the Latin, *margarita*. Another, and, if possible, a more beautiful signification has curiously enough attached itself to this name. The German word *magd*, a maid, was anciently written *magete* and *maghet*, which words were easily confused with Madge and Maggie, and thus with Margaret. Daisies were also called *maghets*, maids or *margarets*, whence we have the French *marguerites*, daisies. Margaret, then may be a *pearl* or *daisy*, as she chooseth; or she may, if she will, combine the beauty and purity of both, in her life and character, and thus prove herself worthy of her doubly significant name. But maidens are something more than pearls or daisies, and well may the poet ask,—

"Where may the bright flower be met
That can match with Margaret?"

Martha is a pleasant name from the Hebrew, but is unfortunate in its signification, meaning *bitterness!*

Mary.—This sweetest of all female names is from the Hebrew, and has the meaning of *exalted;* a truly appropriate signification. It is a famous name, both in sacred and in profane history. In all ages it has literally been exalted. From Mary the mother of Jesus, to Mary, the mother of Washington, the glory has not departed from the name. It has been linked with titles and power, with crowns and coronets, and adorned by goodness and beauty. It has ever been a favourite with the poets. Byron, as he assures us, felt an absolute passion for it. It is inwoven with some of his sweetest verses. It is still the theme of bards and bardlings innumerable.

"The very music of the name has gone
Into our being."

In the French, Mary becomes Marie. Maria is another form of it.

"Is thy name Mary, maiden fair?
Such should, methinks, its music be,
The sweetest name that mortals bear
Is but befitting thee!"

Matilda is from the Greek, and signifies *noble* or *stately*.

Miranda, *admired*, is from the Latin. Prince Ferdinand, in the "Tempest," exclaims,—

"Admired Miranda! indeed the top of admiration."

Nancy, it is believed, may be traced to the same source as Anna and Hannah, which have the same signification, *kind* or *gracious*.

Oliver is from the Latin word *oliva*, an olive-tree, and is thus significant of *peace*. Olivia and Olive are its feminine form.

Phœbe is a bright and beautiful name; one full of the happiest significance. Phœbe, *light of life!* What more or better can a lover or husband desire? Those who have read Hawthorne's "House of the Seven Gables," (and who has not?) will here recall to their minds the sweet-tempered, cheerful, and warm-hearted country-maiden who brought the sunshine and the fragrance of the fields with her, to enliven and purify the dark, damp, and mouldy old mansion of the Pyncheons. She was rightly named Phœbe.

Philemon is *one who kisses*. I think it is of Greek derivation.

Philip, *a lover of horses*, is from the Greek.

Rose (Latin, rosa) *a rose*, is sweet enough for the name of a fairy, or an angel. There is a veritable fragrance in it. It calls up visions of garden-arbours and embowering shrubs and vines. It is poetical as well as euphonic:—

"Where the Junita flows,
And the forest shades repose,
Dwelleth she, my lovely Rose,
In rural grace."

Rosabel (Italian, *rosa-bella*) is from the same Latin root, but comes to us the Italian. It signifies fair or beautiful rose. Rosalie, (French, *rose et lis!*) rose and lily, combines the fragance and beauty of two lovely flowers:

"I love to forget ambition!
And hope in the mingled thought
Of valley, and wood, and meadow,
Where whilome, my spirit caught
Affection's holiest breathing;
Where under the skies with me,
Young Rosalie roved, aye drinking
From joy's bright Castaly."

Rosalind: it is enough to say of this name that it is one of Shakspere's immortalized appellations. The termination, *lind*, may have been coined by him simply for the sake of euphony, or it may have been derived from the Spanish *linda*, neat or elegant, (*rosa linda*, elegant rose.)

"From the east to western Ind
No jewel is like Rosalind."

Rosamond is one of the prettiest names of the rose family. The derivation of the last part of the word is somewhat doubtful. Perhaps it is from *mundi*, (French, *monde*,) and perhaps from the German *mund*, the mouth; so that Rosamond may have originally been *Rosen-mund*, or rosy mouth; but Talbot thinks that it is from the Spanish *rosa montes*, rose of the mountain, that is, the pœony.

Richard is from the Saxon, and signifies *rich-hearted*, or, according to another etymology, *richly honoured*.

Robert, otherwise Rupert or Ruprecht, appears to come from the old Anglo-Saxon words *ro or ru*, red, and *bort*, beard, *red-beard;* so says Talbot.

Romeo, *a pilgrim*, is from the Italian.

Ruth is from the Hebrew, and signifies *a trembler*. It is a pretty name, but is seldom used.

Sarah, *a princess*, is from the Hebrew. In poetry and in familiar address it takes the form of Sally or Sallie, and is found in many a love-song and ballad.

Sophia, *wisdom*, is from the Greek.

"Wilt thou be a nun, Sophie,
Nothing but a nun?"

Susan, is of Hebrew origin, and has the meaning of a *lily*. In its familiarised or pet form it becomes Sue. It is a very pretty name, and is immortalised in Gay's well-known ballad in which its signification is very happily introduced into the closing line:

"Adieu! she cried, and wav'd her lily hand."

Theodore is a fine euphonic name from the Greek, and signifies *gift of God*. Its feminine form is Theodora:

"Since we know her for an angel,
Bearing meek the common load,
Let us call her Theodora,
Gift of God!"

Viola, a *violet*, is derived from the Latin. For a pure, modest, bashful maiden, what name could be fitter.

Walter is of German origin, and signifies a *woodman*.

William is of German derivation, and signifies *defender of many*. "This name," says Verstegan, the distinguished French antiquary, "was not given anciently to children, but was a title of dignity imposed upon men from a regard to merit. When a German had killed a Roman, the golden helmet of the Roman was placed upon his head, and the soldier was honoured with the title of Gild-helm, or golden helmet, and was hailed as a defender." With the French the title was Guildhaume, since Guillaume. The German form of William is now Wilhelm. Wilhelmine and Willamette are feminine forms of the name. Those who bear them, since they cannot be expected to occupy the post of defenders, may well take, as the signification of their names, worthy to be defended.

"What's in a name?"

"Imago animi, vultus, vitæ, nomen, est!"

HISTORY OF TOBACCO AND PIPES.

THAT the practice of smoking tobacco is on the increase in this country is a fact few, if any, will deny; and we have thought that an article on the subject might be interesting to many of our readers, whether enjoyers of the weed or not.

We do not intend to consider the physiological effects of tobacco upon the human system; this we will leave to those to whom such subjects more particularly belong. What we propose is a sketch of the history of tobacco, and a statement of some facts with reference to the trade as now carried on.

The introduction of tobacco dates from the early part of the sixteenth century: Some seeds of the plant were sent, in 1586, to Catherine de Medecis, by Jean Nicot, the French ambassador at Portugal. It afterwards received its botanical name *Nicotiana* from him. It was at one time thought that the term *tobacco* was given from its having been imported from Tobago; Humboldt has, however, shown that tobacco was the term used in the Haytian language to designate the pipe used by the natives in smoking the herb, and the term has been transferred by the Spaniards to the herb itself, and adopted by other nations.

Tobacco was first introduced into England by the settlers who returned in 1586 from the colony which they had attempted to found in the year preceeding, under Sir Walter Raleigh. In the description of Virginia, in "Hakluyt's Voyages," given by Hariatt, who accompanied the expedition, he states the manner in which it is used by the natives, adding, "that the English during the time they were in Virginia, and since their return home, were accustomed to smoke it after the fashion of the Indians, and found many rare and wonderful experiments of the virtues thereof."

The practice of smoking spread among the young men of fashion after its introduction by Raleigh, as it had previously spread amongst the Spaniards, Portuguese, French, and other continental nations. James I. had a strong antipathy to the use of tobacco by his subjects; and went so far as to write a book upon the subject, entitled "A Counterblaste to Tobacco." We quote the following from its pages:—"It is a custom loathsome to the eye, hateful to the nose, harmful to the brain, dangerous to the lungs, and in the black stinking fume thereof, nearest resembling the horrible Stygian smoke of the pit that is bottomless." As early as 1624, Pope Urban VIII. issued a bull, excommunicating those who smoked in churches.

The practice of snuff-taking superseded smoking during a considerable portion of the reigns of George II. and III.; since this period, however, smoking has become general, though the latter habit has by no means fallen into desuetude. The universal indulgence in the luxury soon led governments to take it under its protection, in the way of imposing a tax. Tobacco yields a larger amount of revenue than any other commodity, with the exception of tea and sugar.

To show the extraordinary increase in the consumption, we may state that the duty paid in 1789, was £408,037 4s. 2d.; and since the year 1844 it has been upwards of £3,500,000. It cannot be imported in vessels under 120 tons, or exported in vessels under 70 tons; and the only places allowed for import are London, Liverpool, and a few other principal ports.

For shipment, tobacco is packed into hogsheads. This is done with the greatest care, each bundle being laid separately. When the cask is about one quarter filled, the tobacco is compressed by a powerful lever-press; the pressure is continued several hours, that it may become consolidated. The cask being filled by successive stages till it becomes so dense and compact, that a hogshead forty-eight inches in length, and thirty-two inches in diameter, will contain 1,000 lbs.

On its arrival in this country it is conveyed to bonding warehouses. Those of the metropolis are situated at the London Docks,—immense buildings, containing whole tiers of hogsheads, stretching away in every distance as far as the eye can reach. The whole are under one roof, and there are frequently as many as 20,000 hogsheads, averaging 1,200 lbs. of tobacco each! The reason of this enormous quantity being kept in one place is, that the duty is not demanded while it remains at the docks, where it is considered to be in bond. A small rent is paid during its stay here. This operation is rendered necessary by the high import duty, which renders it better for the owner to sacrifice a large quantity of tobacco which may have become impaired in value, than to pay the duty upon it.

The State does not compel the damaged portion to be released from bond, but allows it to be burnt, without duty having been paid upon it. It is consumed in a furnace on the premises, which, with its chimney, is familiarly termed the "Queen's tobacco-pipe." The ashes are sold for manure, for which they possess good qualities,—one ton of ashes being used to manure four acres of ground.

The various kinds of tobacco owe their different qualities to many different circumstances. Some on the colour of the leaf, some on the extent to which the leaf is liquored, and some on the fineness of the fibres into which it is cut.

"Birdseye" is produced by cutting up the stalk together with the leaf,—a plan never adopted with any other form of tobacco. "Returns" is made of the lightest coloured leaf selected from the hogshead; and this lightness is preserved by caution in the subsequent arrangements. A considerable quantity of water, in the process of liquoring, has a tendency to darken the colour of the leaf, as has likewise an excessive amount of pressure when in the form of cake, by using a small amount both of moisture and pressure: therefore the lightness of "Returns" is preserved.

The strong tobacco called "Shag" owes its quality to different circumstances, the first of which is the choice of the darkest leaves from the hogshead. In the subsequent processes the tobacco is well "liquored," and screwed down into the press with great force.

"Shag" tobacco is subdivided into two sorts, "fine and common,"—the chief difference between which is in the diameter of the fibres into which the leaves are cut.

Many of the names by which tobacco is known were given from the names of the places whence it was brought, and from other circumstances having but little reference to the quality of the tobacco. "Oronoco," a name given to one kind of tobacco, was given from the South American river of that name. "Kanaster," or "Canaster," was originally the name given in America to baskets of rushes or cane in which they put the tobacco sent to Europe; and hence the designation of "Kanaster" tobacco was given to the leaves imported in those baskets. At present the two kinds by these names are manufactured from the best leaf, generally from Havannah.

"Oronoco" is cut finely, somewhat similar to fine "Shag." This forms the chief difference between the two kinds, the quality and preparation being, in other respects, about equal.

The kind of tobacco to smoke is very much determined by latitude. The inhabitants of the north prefer a strong tobacco; and in our own country the great body of smokers, the working classes, use "Shag" tobacco. The inhabitants of those countries approaching the tropics choose a mild and aromatic tobacco.

Of the many ways in which tobacco is used in England, none has had a more striking advance, within the last few years, than cigars.

Although much used in Spain, and the tropical regions of America, it was, till a few years since, scarcely known in England, except to the higher class of smokers; but now, every stripling who is just shooting up into manhood, thinks a cigar indispensable, as a symbol whereby the world may know that he has at length become a man; and, that the information may be more widely diffused, he pursues his new vocation in the open street.

The rate of duty on foreign cigars (nine shillings per pound, about sixteen or eighteen times the real value of the leaf) is so heavy, that the quantity imported from abroad is very small compared with that of tobacco in the leaf. This rate of duty, therefore, has given rise to an extensive home manufacture of cigars.

In the opinion of smokers, a fresh cigar is never good—it requires to be kept—it is perfect when it is touched by mites. Manufacturers know this; for, by means of acids, they fabricate those seductive sparks which are so fascinating to the smoker.

There are many varieties of cigars to meet the taste of smokers. In the opinion of habitual smokers, the Havannah is thought to be the most agreeable for warm weather; for the thoughtful and the imaginative there is nothing like the Manilla; for the cold weather a Principe or Chinsurah cheroot is preferred. A large trade is carried on in London in the fabrication of spurious Cuba cigars, which are vended to low tobacconists and chandler's shops.

And now something of pipes, the most universal mode of imbibing the smoke from tobacco. A writer in the *Asiatic Journal* says:—"In Spain, France, and Germany, in Holland, Sweden, Denmark, and Russia, the practice of smoking tobacco prevails amongst the rich and the poor, the learned and the gay. In Turkey, the pipe is perpetually in the mouth; and the most solemn conferences are generally concluded with a friendly pipe, employed like the calumet of peace amongst the Indians. In the East Indies, not merely all classes, but both sexes inhale the fragrant steam; the only distinction among them consisting in the shape of the instruments employed, and the species of the herb used. In China, the habit equally prevails. A modern traveller (Barrow) states that "every Chinese female, from the age of eight or nine years, wears as an appendage to her dress a small silken purse or pocket to hold tobacco and a pipe, with the use of which many of them are not unacquainted at this tender age."

The materials of which pipes are made are exceedingly numerous. White and coloured earths, porcelain, metals ivory, horn, shells, costly woods, agate cornelian, talc, and amber. Of all pipes, however, meerschaum is considered the best. It is a species of clay, composed principally of silicia, and magnesia, carbonic acid, and water. It is soft and porous; and, in the finest specimens, is almost transparent. The best specimens are from the pits of the Crimea in Asia Minor. It is dug up near Kanii, on Natalia, near Caffa, in the peninsula of the Heracleati. By the Tartars it is called keff-kill, which appellation is derived from the Turkish words signifying froth or foam of the sea; the reason of this designation is, that the workmen assert that, after having been dug away, it forms again, puffing itself up like froth.

Constantinople is the great mart from whence the dealers from Germany, Poland, etc. make their purchases. Their expensiveness arises from the uncertainty attending the manufacture. They are soaked for twenty-four hours in water, and then turned in a lathe; in this process many of them prove porous and are rejected. Sometimes as many as seven out of ten. After being ornamented and finished, they will sell for from one to seven guineas. There are connoisseurs who think that the particular kind of clay of which meerschaums are made imparts an improved quality to the tobacco; we do not undertake to settle this point.

The ordinary clay pipe so extensively used in England and Holland, is made from a clay chiefly derived from Purbeck in Dorsetshire. It is said that a clever pipe-moulder will make three thousand five hundred in a day. In Holland, the commonest kinds of pipes are made in great quantities, and exported to various countries. Pipe making also furnishes employment to upwards of five thousand people in France. Tobacco pipes manufactured abroad, on being imported into England, pay an import duty of £30 for every £100 value.

We have not ventured upon the expression of an opinion in reference to the habit of smoking. The pipe has its strong partisans, and also its violent opponents; we will leave the matter to be settled by them. We cannot, however, close this account of tobacco and pipes without mentioning what must be patent to most observers, that to the hard-working and toiling millions, tobacco is a comfort and a solace.

THE IMPORTANCE OF TRIFLES.

The daily intercourse of the humblest person will afford interesting and instructive examples of the importance of trifles. A stray thought, a mere word of encouragement, has changed a poor man's destiny, has poured hope into despair, and nerved despondency to wrestle with misfortune. A smile—"one sunny smile," drops balm upon all it shines upon, invigorates the weak, reanimates the drooping, and gives joy to the sorrowful. A look—one kind look—who has not felt its influence, but who can estimate its power? It has melted hearts upon which aught else would have striven in vain; it has converted bitter enemies into life-abiding friends; and many a mother could doubtless add, "it has turned a rebellious son into a dutiful child." It is only by trifles, as they are called, that we can form opinions upon the character of those with whom we associate, and we all know how much our success in life depends upon our character. A stray expression, an apparently insignificant action, a benevolent look, a quiver of the lip, a whisper, or a sign, frequently form the standard by which our dispositions are judged; and such trivial events, unobserved as they may be by the careless eye, have made enemies or friends for every one of us, and have caused the weal or wo of thousands of our race.

One of the mental deficiencies which a disregard for trifles displays is a want of reflection, because a reflecting person would see enough with a little observation to convince him that trifles are not to be trifled with; and however narrow may be his sphere of action, a retrospect of his past life would unquestionably recall many circumstances suggesting a similar moral. This failing also betrays a want of common sense. Whoever heard of a trifler, or a careless person, as they are called, considered to be a wise man or woman by those who are capable of judging? Who, with ordinary precaution, would entrust them with what required care, or follow their advice with any degree of confidence? Look around the circle of your acquaintance, and do you observe that those who bear the character of carelessness have either acquired wealth by their exertions, fame by their industry, or a reputation by their judgment? Is not every man of sound sense the very reverse of a trifler; is not he who excels in any kind of labour attentive to the minutest matter connected with that labour; and is not every architect of his own fortune found to be a careful man? We scarcely need to observe that trifles clearly betray a want of frugality. Many a fortune has been lost, and many persons have been prevented from making a fortune, by a disregard for trifles. That "pence make pounds," and that "if we take care of our pence, our pounds will take care of themselves," are true sayings. There are some who have desired to save a portion annually from their incomes, but have delayed doing so from one year to another, in the expectation of being able at a future period to commence their savings with a larger sum. At last old age presents himself, and they discover themselves to be destitute of means for the hour of adversity, and that the annual payment of their formerly despised sum would now amount to a considerable fortune. There are many such in the world. Now no man will ever amass wealth who disregards the smallest item. If we had sufficient courage we would dare to address a few remarks upon this point to those young ladies who wear thin shoes in wet or cold weather, and bring on colds and consumption, who spoil a new dress once a month, and sacrifice twice the necessary materials in their needlework, etc., and call all this, with a toss of the head, "mere trifles."

We would press the foregoing remarks upon the attention of young persons especially. Youth is the period when the seed of our after life is sown. It then becomes important that no tares should be mixed with the wheat—that no habits should be imbibed which will inflict us with future pain. One false step amid the precipices of life may destroy us; one good resolution, fervently embraced and rigidly adhered to, may rescue us from many difficulties. And we hope the few facts we have presented may corroborate what we say. In youth, also, the field of our future labours is generally selected, but that selection, important as it always is, entwined as it is with our prospects in this world, and our destiny in the next, has not unfrequently been influenced by a trifle. We have all heard of Corneille, the Shakespere of French dramatists, the immortal author of "Cid," and "Melité," and, we may add, that it was an apparently insignificant incident in his youth which directed his genius to the drama. It was a mere exclamation of his grandfather which induced Molière, while a youth, to abandon his tapestry trade, and write the satire of "Tartuffe," and the humour of "L'Etourdi." Cowley said he became a poet by reading Spenser; and it is not unlikely that our great Shakespere would never have given us those glorious offsprings of his brain, had not his want of success compelled him to abandon the stage as an actor, and to appear upon it as an author. Flamstead, the astronomer, and Franklin, the philosopher, ascribed the cast of their genius to accident; and Byron tells us that his "Giaour," "Corsair," and "Bride of Abydos," were inspired by a volume of Turkish history he had read in his youth.

It would be folly for us to promise, or any observer of trifles to expect, that such observance would make him a Byron, a Franklin, or a Corneille; but we may safely promise him a gift more valuable, though less externally attractive. An attention to trifles, as well as of what are considered more important duties, will be the surest means of giving success to the merchant, fame to the student, and skill to the mechanic; and what is more, that unalloyed satisfaction which every one must feel who is conscious that he has always striven to do his duty—a source of enjoyment without which the fame of Homer or of Shakespere would be bitterness and gall.

HOUSE PLANTS IN WINTER.

"What is the reason that my plants do not grow so well as Mrs. Jones's? I am sure I take a great deal more pains with them, and water, and nurse, and air them, but all will not do; they are weak, slender, sickly, and some of my best plants have died—while Mrs. Jones seems to take very little care of hers, and yet they grow and bloom beautifully!"

This appeal is not the first complaint of ill-success. The truth is, some plants are actually nursed to death. Care and attention bestowed on plants, which they do not need, are worse than no care at all. It is knowing just what to do, and doing that, and no more, that gives some persons their success. Or, as a late writer remarked, there are two great points to be attended to:—First, not to let your plants suffer by neglect; and, secondly, not to make them suffer by interference.

We would class the requisites for good treatment as follow:

1. Plenty of light.
2. A due supply of water.
3. Proper temperature.

Fresh air, cleanliness, and good soil, are obviously of importance, but are less likely to be neglected than the three first-named wants, and we shall therefore add a few additional remarks under these heads.

1. *Light.*—Plants cannot by any possibility have too much of this. The stand should therefore face the window, and be placed as near to it as practicable, and the window should be broad,—as little obstructed in its light by outside trees as the nature of the case will admit. But rapidly-growing plants require most light; hence such should be placed more directly in front of the window.

2. *Water.*—This must be given according to circumstances. A plant in nearly a dormant state needs very little—those in a rapidly growing condition require considerable. Too much water will make the latter grow slender, but they will bear a greater supply if in a strong light. It must be remembered, as a standing rule, that dormant plants may remain comparatively in the dark, and with little water, and growing ones should have a good supply of water and a full supply of light. But it must not be forgotten that green-house plants generally are nearly dormant during winter, and the soil must therefore be kept but moderately moist, as the plants in this condition do not pump any moisture from the soil, and little escapes directly by evaporation. Drainage, by filling one-fifth of each pot with charcoal, is of importance.

3. *Temperature.*—Many house plants are destroyed by too much heat, which increases the dryness, and both these causes together are more than they can endure. A cool room, never as low as freezing, is best. From 50 to 55 degrees is much better than 65 or 70, the ordinary temperature of living rooms.

Syringing the foliage with tepid water, to wash off whatever dust accumulates, is of use; and the admission of fresh air, when there is no danger of chilling or freezing the foliage should not be neglected.

WEEDS AND HABITS.

Among the innumerable analogies that may be traced between the phenomena of the natural and of the moral world, there are few more perfect, or more instructive, than that which may be shown to exist between the weeds of the field and garden, and the bad habits, the weeds of the heart.

1. Both commence on a small scale. The Scotchman's little paper of thistle seeds was sufficient to overrun an island as large as England with the noxious weeds. So the little mischievous seed which a man sows in his heart will bear a crop of weeds out of all proportion to the original germ.

2. Again, both weeds and bad habits mature and multiply without cultivation. Whatever is valuable must be reared with more or less of care and labour; but these natural and moral pests ask only to be let alone. Neglect is the only care they require. Do nothing, and you do all that they ask.

3. They are both lusty and hardy. They are not apt to be nipped by early or late frosts, or scorched by fiery suns. They are the last things to be drowned out in a flood, or to dry up in a drought. Give them a foothold in the soil, and the smallest possible chance of life, and they will take care of themselves.

4. They are both amazingly prolific. It has been said that a single plant of the weed called "sow thistle" will produce over eleven thousand seeds. We will not venture to calculate how many mischievous seeds may spring from a single weed in the heart, but we know that such things are very prolific.

5. Both are costly and destructive. Though no toil is required to rear a crop of weeds, they eat up the goodness of the soil, and deprive those plants which are valuable of their proportion of nourishment.

6. Again, if suffered to remain long in the ground, they both become very difficult to extirpate. If you would eradicate a noxious plant you must take it in hand at an early stage. If you wait till its seeds are wafted to every corner of the field, and its roots have spread deep and wide, it will mock your efforts to exterminate it. You may cut it down, or pluck it up; you may burn it, or bury it; you may fight it manfully and patiently; but while you are subduing it one spot, it will spring up afresh in another, to mock your labours and vex your soul. So it is with a heart long overgrown with the weeds of bad habits. What a long, and stern, and sorrowful struggle will it require to reclaim that dreary waste, to make it again to blossom as a garden! True, terribly true, is the record which declares that it as difficult for those to do good that are accustomed to do evil, as for the Ethiopian to make white his dusky hue, or the leopard to change his spotted skin. Southey has pictured this struggle with confirmed bad habits with great vividness in the following lines, with which we close this sober, though not unseasonable, homily:—

> "For from his shoulders grew
> Two snakes of monstrous size,
> Which ever at his head
> Aimed their rapacious teeth,
> To satiate raving hunger with his brain.
> He, in the eternal conflict, oft would seize
> Their swelling necks, and in his giant grasp
> Bruise them, and rend their flesh with bloody nails,
> And howl for agony;
> Feeling the pangs he gave; for of himself
> Co-sentient and inseparable parts
> The snaky tortures grew."

MENTAL DISCIPLINE.

It seems to be thought by many, that the design of education is the communication of knowledge to passive minds to be laid up for use in the storehouse of memory. But as well might all the products of agriculture and the mechanic arts be laid up for future use by [illegible] young agriculturist and mechanic. It is the acquisition of vigour and skill for a future productive industry, which constitutes a proper physical training; and it is vigour and dexterity of mind in the acquisition and application of knowledge, which constitute the object of mental training.

Elementary principles must be ascertained. No man can understand any science, or anything, who cannot lay his hand on the elementary principles, and by the light of these trace out the relations and dependencies of the whole. These are the keys of knowledge, to which all the sciences open their arcana, and without which they remain inexorably shut to all manner of demand and solicitation.

Without this knowledge of first principles, a man will behold truth always in isolated fragments, and be surrounded by a wilderness of light. Such knowledge is like a mass of disordered mechanism; confusion worse confounded, and utterly incapable of use; a maze, overwhelming and inextricable.

There must be a precision of thought. The mind cannot be thoroughly exercised without it; and nothing worthy of the name of knowledge can otherwise be gained. There are many who go round a subject, and pass between its parts, and verily think they understand it, who, when called upon for an accurate descripton, can only hesitate and stammer amid the glimmering of their undefined moonbeams of knowledge.

Why is this? It is because they have acquired no definite knowledge of the subjects they have studied. They understand all subjects in general, and none in particular; and for the purposes of exact knowledge adapted to use, might as well have been stargazing through a dim telescope in a foggy night.

Everything is what it is, exactly, and not merely almost; and for purposes of science or use, a hair's breadth discrepancy is as fatal as the discrepancy of a mile. Who could raise a building where every mortice and tenon only almost fitted? or construct a useful almanack when his calculations were almost, but not altogether exact?

It is this precision of knowledge which it is necessary to acquire; and without it, not only are the blessings of an education lost, but the multiplied evils of undisciplined minds — indefinite conceptions and fallacious reasonings, and the bewilderment of a declamatory flippancy of specious words—are poured out upon society with an overflowing flood, sweeping away the landmarks of truth and principle, and covering the surface with brush, and leaves, and gravel.

No wonder that scepticism is rife, which proclaims knowledge to be unattainable, and all things doubtful. What other result could be expected from minds reared without first principles, and reasoning without precision of conception, in respect either to words, thoughts, or things?

The art of independent investigation is of primary importance. We should be accustomed to explore every subject, to analyse and take it apart, ascertain and define its elementary principles, and all its dependencies and relations, and label the whole with letters of fire, and put it together again; then we shall understand it, then we shall never forget it; and then, everywhere and instanter, it will be ready for use.

Now this can never be accomplished by lectures and oral instruction, from the simple consideration that the act of receiving knowledge, and the act of acquiring it by personal efforts, are entirely different in respect to mental exertion and thorough attainment.

In the one case the mind is passive, and records upon the tablets of memory only a few fragments of what is said, soon to be effaced, and recovered only by recurring to imperfect notes; while in the other, the mind's best energies are employed in unlocking and dissecting the subject, and the mind's own eyesight in inspecting it; and there results the mind's accurate and imperishable knowledge of it.

We do not mean that lectures are useless, or to be dispensed with; but they are to be only the important aids of original investigation. The young adventurer must have some stock in trade to begin with, some raw material for his mind to work upon; and on some plain subjects perhaps he has it. Let him experiment, then, first on the most familiar subject. Let him reconnoitre his own mind, and ascertain how much and what he knows, exactly, on the subject, and put it down in definite memoranda; and if they are the elementary points, it will be easy, by their light, to follow out their relations and dependencies, from centre to circumference; and if they are remote inferences and relations, it will be easy to follow them up till they disclose the elementary principle of which they are the satellites.

When this has been done, and all that his own ingenuity can disclose is found out, he may consult authors, and enlarge and connect his views by their aid. When called to investigate subjects which are beyond the sphere of his incipient knowledge, conversation and lectures may open the door of the temple, and put in the hand of the young adventurer the golden thread which may lead him out of darkness into open day.

Mind, which has opened the fountains of knowledge, will thirst and drink and thirst and drink for ever. It is discipline which doubles its capacity, its economy of time, its energy of application, the amount of its acquisition, and the duration and amount of its active usefulness.

Few minds uninitiated to the habit of investigation pass, without faltering, the meridian of life, or move on after it, but in the commonplace repetition of commonplace ideas: while to minds exercised by use to analyse and decompose and reconstruct the elementary order of things, the work is ever interesting, ever new, and the product ever fresh, original, and bright as the luminaries of heaven.

The results of such training will be eloquence in the pulpit, eloquence at the bar, and eloquence in the halls of legislation, such as none can sleep under nor resist, and whose victories, when achieved, will, like the battle of Trafalgar, leave the world in a blaze.

What produced the immortal eloquence of Demosthenes? A mind which Heaven created; the culture of it by his own efforts; the stimulus of it by a popular government, and the provocations of Philip of Macedon.

Instructions may correct faults, and reduce to order the excess of exuberant feeling; but one might as well teach artificial breathing as artificial eloquence. Teach men how to think, and how to feel, and, with good linguistic culture, we cannot prevent their being eloquent. We could as well stop thunder-storms and volcanoes as the electric outburstings of soul, with fervid, overflowing energy.

THUNDER AND LIGHTNING.

LIGHTNING is caused by the approach of two clouds to each other, one being overcharged and the other undercharged with electricity; the fluid rushes from the former and discharges itself into the latter, until each contains a like quantity. Lightning clouds vary in altitude, being often three or four miles from the earth, and sometimes they are so close that their edges actually touch it. If the cloud be a long distance off, the electrical fluid, meeting with a great resistance from the air, diverts it into eccentric courses, and causes what is known as fork-lightning. Sheet-lightning is occasioned either by the reflection of distant and imperceptible flashes or several being intermingled. When a man is struck dead by lightning, the electric fluid passes through him, and by producing a violent shock on the nerves, instantaneously destroys all vitality. Thunder arises from the concussion of the air closing immediately after being separated by lightning; if the peal be a broken, irregular roar, it is a sure sign that the lightning cloud is a great distance off; as some of the vibrations of air, necessarily travelling much quicker than others, reach the ear first, and coming at different periods occasion a long-continued rumble. Lightning is seen sooner than thunder can be heard, because the former travels a million times faster than sound.

Heat is communicated from one body to another by five different causes, viz.: conduction, reflection, convection, absorption, and radiation. *Conduction* is heat communicated by actual contact of two bodies. The best conductors of heat are gold and silver; porous, light substances, such as wood, fur, charcoal, &c., are the worst. Wood is often used in conjunction with metal; for instance, a metal tea-pot generally has a wooden handle, on account of wood being such a bad conductor, that the heat of the boiling water is not conveyed to the hand with such rapidity as if it were metal. Such an excellent conductor is metal, that when touched, the heat from the hand passes rapidly into it, causing to the hand a sensation of extreme frigidity, which is generally considered to come from the metal. When the hot hand touches a pump-handle, the heat of the former passing quickly into the latter, causes the iron to appear cold, when, in reality, it is of the same temperature as the wood in the pump; only the sudden loss of its natural heat produces a feeling of extreme coldness to the hand. Marble is also such an excellent conductor that, when touched, the heat from the hand passes so suddenly into the marble, that a sensation of intense cold is felt, which is in reality caused by the heat leaving the hand, and not by the substance itself, as is generally supposed to be the case. *Reflection* is throwing back the rays of heat from the surface of a reflecting body towards the place from whence it came. Highly polished metals are the best reflectors; for instance, in a kitchen with a tin screen placed behind a joint roasting, the tin reflector throws the heat of the fire back again upon the meat, and thus accelerates its cooking, and conduces to keep the kitchen cool. *Convection* is heat being conveyed to another place or thing; as water being heated at the bottom of a kettle mounts up and carries its heat through the rest of the water as it ascends. *Absorption* of heat means to suck it up as a sponge does water;—black cloth, for instance, would absorb the rays of the sun, if placed in it; but if one end of the cloth were made hot, it would not convey the heat to the opposite end, cloth being a bad conductor. A new kettle is longer boiling than an old one, because its sides and bottom being bright, they *reflect* the heat; but on an old kettle the black soot *absorbs* the heat, and causes the water to boil much quicker. *Radiation* signifies the emission of rays. The sun emits both rays of heat and light; fire emitting rays of heat warms us when standing before it; in fact, everything radiates heat to a greater or lesser degree. Polished metal is a bad radiator of heat; therefore it keeps the water hot much longer than other compositions. For that reason metal tea-pots are used in preference to black earthenware, except in cases where the teapot is always placed on the hob, when the common black tea-pot draws the tea much better; because it *absorbs* abundantly the heat, and keeps the water hot; whereas a bright metal tea-pot set upon the hob throws off the heat by *reflection*.

IN-DOOR PLANTS.

As the plants are placed in or near windows, there is no injurious deficiency of light; but as it comes to them most intensely on one side, they should be half turned round every day, that their heads may have a uniform appearance, and the leaves be not turned only in one direction. If the window faces the south, the intense heat and light should be mitigated during the mid-day of the summer months by lowering the blind. Whenever the out-door temperature is not below 34°, the plants will be benefited by having the window and door of the room open. They cannot have too much fresh air at any season of the year if they are not grown under a Wardian case; for the exterior air always contains a due proportion of moisture, whilst the air of a room is invariably drier than is beneficial to the plants. A due supply of moisture in the air, as well as in the soil, is absolutely necessary to our room plants. To obtain this in the best available degree, little porous troughs, constantly filled with water, should be kept on the stand among the pots; and the saucers of the pots themselves, if made according to Hunt's plan, may always have a little water remaining in them. The application of water to the soil requires far more attention than it usually receives. Room plants mostly are the *protegés* of ladies, who administer water with their own hands; and so long as the novelty and leisure prompt to this attention all goes well; but no room plant ever existed, perhaps, which was not, at some period of its life, left to the tender mercies of a housemaid, with the frequent usual consequences of a deluge of water, cold from the pump, after the roots had become heated and parched by days of total abstinence. Plants so treated cannot flourish. The water should be allowed to stand in the kitchen for some hours before it is applied to the plants, so that it may be as warm or warmer than the soil to which it is to be added. It may be given in dry, hot weather, every second day, and in such abundance as to pass slightly through the earth into the saucers.

ENQUIRIES ANSWERED.

GENERAL OBSERVATIONS IN STAINING.—When alabaster, marble, and other stones, are coloured, and the stain is required to be deep, it should be poured on boiling hot, and brushed equally over every part if made with water; if with spirit, it should be applied cold, otherwise the evaporation, being too rapid, will leave the colouring matter on the surface, without any, or very little, being able to penetrate. In grayish or brownish stones, the stain will be wanting in brightness, because the natural colour combines with the stain; therefore if the stone be a pure colour, the result will be a combination of the colour and stain. In staining bone or ivory, the colours will take better before than after polishing; and if any dark spots appear, they should be rubbed with chalk, and the article dyed again to produce uniformity of shade. On removal from the boiling hot dye-bath, the bone should be immediately plunged into cold water, to prevent cracks from the heat. If paper or parchment is stained, a broad varnish brush should be employed to lay the colouring on evenly. When the stains for wood are required to be very strong, it is better to soak and not brush them; therefore, if for inlaying or fine work, the wood should be previously split or sawed into proper thicknesses; and when directed to be brushed several times over with the stains, it should be allowed to dry between each coating. When it is wished to render any of the stains more durable and beautiful, the work should be well rubbed with Dutch or common rushes after it is coloured, and then varnished with seed-lac varnish, or if a better appearance is desired, with three coats of the same or shell-lac varnish. Common work only requires frequent rubbing with linseed-oil and woollen rags. Alabaster, marble, and stone, may be stained of a yellow, red, green, blue, purple, black, or any of the compound colours, by the stains used for wood.

GOOD MANNERS.—There can be no general rule for good manners that supply the use of individual judgment in their application. A general rule may, in special cases, require to be reversed. The same conduct that is acceptable in one condition of mind becomes offensive in another; and what will please a stranger is often a nuisance to a member of the family. Attention, in the one case, has a welcome appearance of kindness and hospitality; in the other it is troublesome and unwelcome officiousness. A good-natured man will bear more familiarity than a reserved and unsocial one. A thick-skinned man will endure ruder habits than a thin-skinned one; and the ruder habits will seem pleasanter to him than the favourite habits of his more sensitive counterpart. A well-mannered man will find out all this with an imperceptible glance of his eye and he will act accordingly, accommodating himself to his companion; and if his companion be equally well-mannered and accommodating, they understand one another immediately.

TO PAINT THE GLASSES OF MAGIC LANTERNS.—Draw on a paper the subject you desire to paint; lay it on a table or any flat surface, and place the glass over it; then draw the outlines with a very fine pencil in varnish, mixed with black paint, and when dry, fill up the other parts with their proper colours. Transparent colours must be used for this purpose, such as carmine, lake, Prussian blue, verdigris, sulphate of iron, tinctures of Brazil wood, gamboge, &c.; and these must be tempered with a strong white varnish to prevent them pealing off. Then shade them with black or with bistre, mixed with the same varnish.

FAIRY RINGS.—These singular phenomena, which have given rise to so many absurd notions of their superhuman or electric production, may be resolved into a simple fact of natural science. Botanists tell us that the under-ground spawn of fungi grows only in a border radiating in every direction from the centre, where the spore originally germinated; therefore, the thallus of a fungus is the commencing point of a fairy-ring. On analysing these fungi, it has been found that they concentrate from the surrounding ground large quantities of phosphates in their tissues, and hence, when they decay, the ground which has produced them is more fertile, and the grass more green. As the original little ring of spawn only grows outwardly, it is clear that its fructification—the toad-stools—must grow in a ring, gradually increasing in diameter.

TO WHAT SOILS IS LIME APPLICABLE?—Every clay soil, every peaty soil, and every soil in which vegetable fibre does not readily decay, because that is a sign that it contains some antiseptic acid which prevents decay. This is the case in peat beds and swamps. Sandy, gravelly, or thin soils, may be over-limed and injured; because in causing the decay of vegetables, it sets free the ammonia, the very substance of fertility required. To prevent this, more food must be given for the lime to act upon. No farmer who knows what the action of lime is, upon all soils, will ever do without it, as an accessory to his manure. It is a component part of all crops grown by the farmer. When applied to lands which had not borne wheat for many years, it has at once restored it to fertility for that crop. Where it has failed once to remunerate the farmer using it, it has proved of the greatest benefit a hundred times.

CLEANLINESS FOR PLANTS.—"If as much washing were bestowed in London," says Dr Lindley, "upon a pot plant as upon a lapdog, the one would remain in as good condition as the other. The reasons are obvious. Plants breathe by their leaves; and if their surface is clogged by dirt, of whatever kind, their breathing is impeded or prevented. Plants perspire by their leaves; and dirt prevents their perspiration. Plants feed by their leaves; and dirt prevents their feeding. So that breathing, perspiration, and food, are fatally interrupted by and accumulation of foreign matters upon leaves. Let any one, after reading this cast an eye upon the state of plants in sitting-rooms or well-kept green-houses; let them draw a white handkerchief over the surface of such plants, or a piece of smooth white leather, if they desire to know how far they are from being as clean as their nature requires."

MIGRATION OF PLANTS.—Botanists have long been convinced that the facts connected with the diffusion of plants may often be explained by an inquiry into the structure of their seeds, the lightness of these, and their capability of transportation by winds; by their texture preserving them from destruction in the waters of the ocean; by the prevalence of particular currents in the air or sea; or by the presence or absence of mountainous barriers, or other obstacles to their dispersion. It had been observed that the God of nature has provided a variety of methods for the diffusion of seeds. The most important are doubtless winds, or rivers, or marine currents. Some seeds are capable of preserving their vitality in the stomach of birds, and are thus propagated. Such are the mistletoe and juniper. A number of facts are upon record, which prove that the migration of plants, by means of currents in the ocean, to distant shores, where the climate is congenial to them, have formed new colonies. Several remarkable instances of this description are recorded in the *Amœnitates Academicæ.*

GRASS UNDER TREES.—By sowing nitrate of soda in small quantities in showery weather, under trees, a most beautiful verdure will be obtained. I have used it under beech trees in my grounds, and the grass always looks green. Having succeeded so well on a small scale, I have now sown nitrate of soda among the long grass in the plantations, which cattle could never eat. I now find that the herbage is preferred to the other parts of the field.

DIET AND CLOTHING.—All changes in diet and clothing ought to be gradual. Some persons are made ill by the fresh fruits and vegetables of spring, only because they partake too largely of them at first. Some believe that walking or riding does not agree with them, because when indulged in rashly and without previous training, it has caused them serious indisposition. But there are few persons who, by beginning with walking half a mile out and back again, and adding a quarter of a mile every day, could not in a fortnight walk six or eight miles without inconvenience. Any one who will fairly try this gradual increase of exercise, will be astonished at the power it developes.

THE BEST BREED OF FOWLS.—The best breed is allowed to be that produced between our common Irish hen and Dorking or Surrey cock. This cross is larger and plumper, and much more hardy than the pure Dorking, which possesses remarkable delicacy of flavour; but neither its delicacy of flavour nor its particular whiteness of flesh are in the least injured by the change. Many experienced poultry fanciers contend that the common hens, when properly fed and managed, are better layers; but even if it were the case, they are not so profitable where the sale of the fowl is the object of the owners, as a large, well-fed Dorking will often bring more than double the price of a similarly-treated dunghill fowl.

PREVENTION OF CONSUMPTION.—In the course of the proceedings of the British Association at Belfast, Dr. M'Cormac read a paper on the duty of guarding against disease from atmospheric impurity. The doctor stated that every individual, whatever his station, should, for the preservation of health, take a morning bath, pedestrian exercise, and breathe night and day a pure air. After showing how illness was produced or aggravated by atmospheric causes and want of cleanliness, and alluding to the want of sanitary arrangements, he stated that the respiration of impure air was the sole cause of consumption, and that were a person to live night and day in the open air he could not become consumptive. To confine the consumptive in close heated apartments was but to increase and hasten the disease. They ought to be kept as much as possible in the open and pure air, an ounce of oxygen being worth a ton of fish oil. Owing to the perfumes, heavy hangings, and the atmosphere of the houses of the rich, they were almost as impure as the houses of the poor, and the result showed that the rich were no more exempt from consumption than the poor. The doctor insisted on the necessity of all houses being regularly ventilated with large bodies of air—of good sewerage—and cleanliness for the preservation of health.

TO SWEETEN MEAT AND FISH.—When meat, fish, &c., from intense heat or long keeping, are likely to pass into a state of corruption, a simple and sure mode of keeping them sound and healthy is by putting a few pieces of charcoal, each the size of an egg, into the pot or saucepan, wherein the fish or flesh are to be boiled. Among others, an experiment of this kind was tried upon a turbot, which appeared to be too far gone to be eatable. The cook, as advised, put three or four pieces of charcoal, each the size of an egg, under the strainer in the fish-kettle; after boiling the proper time, the turbot came to the table perfectly sweet and firm.

MENTAL POWER OF THE TWO SEXES.—The question as to the different intellectual capacities and talents of man and woman has been frequently agitated; and it seems to be decided, that in most respects there is an equality of mental power; and that in quickness of apprehension and accuracy of discrimination women generally excel. Their imagination is not surpassed by the other sex; nor is their judgment less to be depended on, in cases where they have had experience and a full opportunity to compare. For in most cases, judgment is but another name for taste; and in taste, as well as in imagination, women have long been allowed the highest meed of praise. But they also make rapid progress in studies which require something more than taste and imagination. They are equally capable of attention as the other sex, and their memory is also equally retentive. In the study of grammar and in acquiring a knowledge of languages, they succeed altogether as well as men. And their compositions on most subjects may be justly pronounced equally pure and elegant, when compared with those of the masculine pen. In metaphysics and mathematics their trophies have not been so great. But it may be said, perhaps, that they have not put forth any efforts in these departments. And it may be as well that they should not. For other and indispensable duties seldom allow them the leisure for such severe application.

THE USE OF FRUIT.—Instead of standing in any fear of a generous consumption of ripe fruit, we regard them as positively conducive to health. The very maladies commonly assumed to have their origin in a free use of apples, peaches, cherries, melons, and wild berries, have been quite as prevalent, if not equally destructive, in seasons of scarcity. There are so many erroneous notions entertained of fruit, that it is quite time a counter-acting impression should be promulgated, having its foundation in common sense, and based on the common observation of the intelligent. We have no patience in reading rules to be observed in this particular department of physical comfort. No one, we imagine, ever lived longer, or freer from the paroxysms of disease, by discarding the delicious fruits of the land in which he finds a home. On the contrary, they are necessary to the preservation of health, and are therefore caused to make their appearance at the very time when the condition of the body, operated upon by deteriorating causes not always understood, requires their grateful, renovating influences.

CULTIVATION OF HYACINTHS.—*To grow Hyacinths in Beds.*—For convenience the beds should not exceed five feet in width. Three feet of soil should be dug out, and again filled up to nearly one foot above the surface with compost, consisting of two-thirds sandy loom, and one-third thoroughly decomposed cow-dung, to which may be added a small portion of *sea* sand or salt. Plant the bulbs from six to nine inches apart, each way, and three or four inches deep. *To grow Hyacinths in Pots.*—Hyacinths succeed under pot-culture only when their roots are allowed plenty of room; and with this view, a kind of pot called the hyacinth-pot, is manufactured for the purpose. Plant the bulbs so as to leave a small portion of the top above the surface. Give a supply of water, and place the pots in a cool shady situation where the sun cannot reach to stimulate the plants into LEAF before they have made good roots; or they may be covered to the depth of three or four inches with sandy soil for a month or six weeks. They may then be removed to a greenhouse, or to a light and airy room away from the fire. *To bloom Hyacinths in Water Glasses.*—Hyacinths in water are more liable to rot before they have formed roots than when grown in soil, and even in a more advanced state, unless they be carefully tended, the roots will sometimes show symptoms of decay; the result being a poor flower or no flower at all. The glasses should be filled till the water nearly touches the base of the bulb; rain or river water is to be preferred. They are then to be placed in a cool dark situation for eight or ten days, when the water should be changed, and the thick brown musty substance removed from the crown or base. The *decayed* portion of the onion-like skin may also be cleared away, taking care not to injure the root-fibres. As roots naturally avoid exposure to light, the glasses should again be placed in a dark place for a considerable time: indeed the larger and finer the roots have become previously to the plants being forced into leaf, the greater the probability of an excellent flower. Fresh water should be given once a week or oftener according to convenience, *but with the chill taken off*, so that it may not be under the temperature of that in which the plants have been growing, otherwise they will receive a check.

COCOA-NUT CAKES.—Three eggs, ten ounces of sugar, as much grated cocoa-nut as will form a stiff paste. Whisk the eggs very light and dry, add the sugar gradually, and when the sugar is in, stir in the cocoa-nut. Roll a tablespoonful of the mixture in your hands in the form of a pyramid, place them on paper, put the paper on tins, and bake in a rather cool oven till they are just a little brown.

COFFEE.—Choose the coffee of a very nice brown colour, but not black (which would denote that it is burnt, and impart a bitter flavour); grind it at home, if possible, as you may then depend upon the quality. If ground in any quantity, keep it in a jar, hermetically sealed. Put two ounces of ground coffee into a stewpan, which set upon the fire, stirring the powder round with a spoon until quite hot, when pour over a pint of boiling water; cover over closely for five minutes, when pass it through a cloth, warm again, and serve.—*Soyer.*

RICE CUP CAKE.—Two cups of sugar, two cups of butter, one cup and a half of rice-flour, half a cup of wheat-flour, ten eggs, a teaspoonful of nutmeg, half a pound of currants, half a gill of rose-water. Beat the butter and sugar very light; whisk the eggs till they are very thick, and stir in, add the nutmeg and the flour gradually, then the rose-water. Beat the whole very hard for ten minutes. Stir in the fruit, which must be floured, to prevent it from sinking to the bottom of the cake. Butter a pan, line it with thick paper, well buttered, and bake it in a moderate oven. Or you may bake the batter in small pans.

DUTCH LOAF.—A quarter of a pound of butter, half a pound of sugar, one pound of dried currants, two tablespoonfuls of cinnamon, a pint of sponge, as much flour as would form a dough. Make a sponge the evening before you wish to bake the cake, of a teacupful and a half of milk, and as much flour stirred into it as will form a thick batter, with a little salt, and one gill of good yeast. In the morning this sponge should be light. Then beat the butter and sugar together, add the cinnamon, currants, and sponge, with flour enough to form a dough. Butter a pan, and when it is light, bake it an oven about as hot as for bread.

THINGS TO BE FOUND OUT.—Nature is not exhausted. Within her fertile bosom there may be thousands of substances, yet unknown, as precious as the only recently found gutta percha. To doubt this would be to repudiate the most logical inference afforded by the whole history of the earth. Corn and grapes excepted, nearly all our staples in vegetable food are of comparatively modern discovery. Society had a long existence without tea, cotton, sugar, and potatoes. Who shall say there is not a more nutritious plant than the sugar-cane—a finer root than the potatoe—a more useful tree than the cotton? Buried wealth lies everywhere in the bowels of the earth.

HOW TO MAKE A FORTUNE.—Take earnestly hold of life, as capacitated for, and destined to, a high and noble purpose. Study closely the mind's bent for labour or a profession. Adopt it early, and pursue it steadily, never looking back to the turning furrow, but forward, to the new ground that ever remains to be broken. Means and ways are abundant to every man's success, if will and actions are rightly adapted to them. Our rich men and our great men have carved their paths to fortune, and by this internal principle—a principle that cannot fail to reward its votary, if it be resolutely pursued. To sigh or repine over the lack of inheritance, is unmanly. Every man should strive to be a creator instead of an inheritor. He should bequeath instead of borrow. The human race, in this respect, want dignity and discipline. They prefer to wield the sword of valorous forefathers, to forging their own weapons. This is a mean and ignoble spirit. Let every man be conscious of the power in him and the Providence over him, and fight his own battles with his own good lance. Let him feel that it is better to earn a crust than to inherit coffers of gold. This spirit of self-nobility once learned, and every man will discover within himself, under God, the elements and capacities of wealth. He will be rich, inestimably rich in self-resources, and can lift his face proudly to meet the noblest among men.

HORSERADISH.—Horseradish should be grown for cattle. It is as good a condiment for them as it is for man.

SILVERING IVORY.—To silver ivory fancy work, prepare a strong solution (a drachm to two ounces) of lunar caustic; protect such parts as are not required to be acted on by copal varnish; then immerse the ivory-work in the solution; when it becomes yellow, remove it to a glass vessel containing distilled water, and expose to the rays of the sun. In a short time it will become black in those parts that are not protected; it should then be removed from the water, wiped dry, and rubbed well with a piece of soft leather, when the design will appear on the ivory in a metallic state, and burnished; the varnish should then be removed. We particularly recommend the last process for such purposes as ornamenting tablets, paper-knives, &c.; marking crests on table knives, or, in fact, anything that requires ornament or cypher.

JAPANNING.—TO PREPARE WOOD OR METAL.—For japanning, the surface should be rubbed smooth and clean with sun-paper or fish-skin, and rushes. Papier maché requires to have any prominent parts removed with pumice-stone, then rubbed smooth, the same as wood, and lastly, a coat of strong size applied. Leather must be securely strained, either on frames or boards. The materials required consist of common size or parchment size, fish-skin, sand, or glass paper, Dutch rushes, rotten stone, whiting, varnishes, various pigments for grounding and colouring, oil, spirits of turpentine, mother-o'-pearl, and gold. The instruments are simply some old linen and woollen rags, a little wool or cotton, and different sized brushes of hog's and camel's hair. Japanning may be divided into spurious japanning and real japanning. Spurious japanning comprises three varieties, the first of which consists in painting in water-colours on an under-coat of sizing or opaque grounding, laid on the wood or other substance, and then finishing with the proper coats of varnish. The colours are tempered with very strong isinglass, size, and honey, and laid on very flat and even. This kind of work is only applicable to such articles as are not exposed to much wear or violence, and generally lasts for a considerable time. The same method is pursued when painting with water-colours on gold grounding, to imitate the Indian-work. The second consists in colouring prints glueing them to wood-work, and varnishing with copal or mastic varnish. The third is simply employing a solution of sealing wax in spirits of wine as the vehicle, which is laid on smoothly, and allowed to dry gradually; the proportion of wax being two ounces to a pint of spirits.

HORSE-SHOEING.— Many horses are injured by carelessness, or improper management in shoeing. To learn how to fit a shoe accurately to the horse's foot, so that it shall properly protect the foot, and at the same time avoid the liability to injure it, is no mean acquisition. The smith, to conduct his business properly, should have an accurate knowledge of the anatomy, physiology, and pathology of the horse's foot, and then he will perform the operation of shoeing, not merely as though he was nailing a piece of iron to a block of wood, but with all the care and nicety which the living structure requires. The feet of horses differ so much, that it requires great judgment and a thorough knowledge of their anatomical structure, to shoe each horse in a manner best calculated to promote the intentions of nature. Smiths generally pare the heel too much, or rather, do not pare the toe enough; the reason is, that it is so much harder to cut. When the horse stands upon the foot, the heel is so much lower than it should be, that the cords of the leg are strained; so, after a night's rest, the legs are stiff and sore, and the horse moves very awkwardly. This, sometimes, is attributed to founder, when in reality it is caused by nothing but bad shoeing. Frequently the toe is burnt off. This is also injurious; for, so far as the heat penetrates, the life of the hoof, and the only matter which gives toughness, are destroyed, and the hoof becomes brittle, and liable to crack. Care should be taken to see that the points of the nails are free from defects; for, sometimes, after the nail has entered the hoof, it splits, and a part penetrates the quick, causing lameness.

CARROTS.—From an experience in their growth, and a close observation of their effects, we are prepared to say that this is one of the best roots grown for the food of milch cows, and are justified in affirming that the carrot is a highly nutritive root; that milch cows, fed properly with it, yield more milk than when fed upon hay alone, yield it of a better quality, and, withal, thrive upon it; but carrots, as well as parsnips, sugar-beets, or mangel-wurtzel, or, indeed, any other roots, when given to milch cows, should be mixed with cut straw, hay, or fodder of some kind; besides which, they should be given other portions of long provender, uncut or cut, as the feeder may see fit, by itself. When given roots, cattle of course consume long food, but still they should receive such portions as, when added to the roots they may receive, will form an equivalent in nutrimental matter to a full feed of hay-fodder, or other long provender.

FRUIT-ROOMS.—A very important consideration in the economy of gardening is the construction and proper keeping of fruit-rooms, and we will satisfy the inquiries of several correspondents on this subject:—The fruit-room ought to be well ventilated, for which purpose it ought to have a small fire-place. The room may be of any form; but one long and narrow is generally best adapted for ventilation and heating, and drying, when necessary, by a flue. The system of shelves may be placed along on one side, and may be raised to the height of six feet or more, according to the number wanted. Forsyth directs that all the shelves or floors on which apples are to be kept or sweated should be made of white deal, as when red deal is made use of for these purposes it is liable to give a disagreeable resinous taste to the fruit, and spoil its flavour. When white deal cannot be procured, he advises covering the shelves with canvas.

WINTER STORING OF PLANTS.—An evil especially to be guarded against by the gardener is the over-crowding of plants in green houses during the winter. "Such collections," observes the *Gardeners' Journal*, "are for the most part subject to all the ill effects of damp and its attendants, mildew and rottenness. The free circulation of air becomes impossible; weakness and etiolation are sure to result. Half-ripened shoots have no chance of elaborating and concentrating their fluids; flowers are scanty or ill-formed as an inevitable consequence; and from these circumstances arise the oft-repeated complaint—'The winter has played sad havoc among my plants; not the frost, but the damp. Even the tops of the geraniums went black from the effects of it, and many of them have rotten patches in the leaves. The want of sun has done the mischief.'"

LIQUID MANURE.—We are glad to perceive that the efficacy of liquid manure in the production of vegetable life is becoming appreciated by the intelligent classes who cultivate the soil. A writer in the journal we have quoted above says, "In the cultivation of our finer fruits—pine-apples, as an instance—it is a well-known fact, that the strongest plants, and consequently the finest and heaviest fruits, are to be had by the liberal application of manure in a liquid state. In the kitchen-garden it is turned to immense advantage, considering that heavy and speedy produce is what is most desirable. In order to have fruit-tree borders properly drained, depth of soil is not an object; for obvious reasons, then, we have the roots near the surface of the border; and in consideration of this, liquid manure becomes available." An extensive landed proprietor, in Ayrshire, says: "It is quite wonderful what a quantity of Italian rye-grass, watered with the liquid manure, can be cut from a Scotch acre. It can be cut four times in the year: and the weight of the four cuts is upwards of 40 tons of moist Italian rye-grass."

MODE OF PREPARING GUANO FOR USE.—In the "Gardening for the Million," we find the following excellent directions for economising and profitably distributing the valuable manure which has so greatly assisted the labours of the farmer:—

"A very simple and economical mode of preparing guano for use, is to spread two hundred weight of dry sifted mould, &c., three or four inches thick, one hundred weight of sifted guano over it, and two hundred weight of the mould, &c., on that again: leave the heap for two or three days, protected from the weather; then let it be well mixed and sifted through a common garden sieve. Thus prepared, it can be sown without inconvenience to the farmer, and spread without loss evenly over the field. Guano may be also used with equal safety in a liquid state, dissolved in water; and perhaps this is the most effectual mode of developing its powers, for, like all concentrated fertilisers, it requires a considerable supply of moisture, and has always exhibited the most productive results during wet seasons. For this reason it is particularly desirable that the dry mixture or compost, as we shall call it, should be used immediately before rain. But, as irrigation is too tedious and costly for extensive operations, the liquid application is almost necessarily confined to the flower and kitchen garden."

PRESERVED FRUIT.—The following article appeared some time ago in the *Chronik des Gartenwesens*:—"Many persons have a custom of spreading out their apples, which were gathered in the month of October, on the bottom or on shelves in an upper spare room, with the view to dry them, in order, as supposed, to make them keep; but this is erroneous, as apples kept in such rooms for weeks together will shrivel and lose their aroma, without having gained any benefit in point of keeping. It is stated that the following method of preserving apples till spring answers exceedingly well. The apples are left as long as possible on the trees, till frost is expected; when the fruits are gathered they are placed in large tuns, and filled with dry sand; during the summer the sand ought to be dried by exposing it to the rays of the sun. After the bottom of the tun is covered with some sand, a layer of apples is put upon it; having filled the space between the apples, and covered them sufficiently with sand, an additional layer of apples is placed, again covered with sand, and so the process is continued till the tun is full. The peculiar advantages of this management are—1st, the sand excludes the air, which is essentially requisite for their duration; 2nd, the sand prevents the evaporation of the apples, therefore their aroma is preserved, and the humidity or "sweat" which appears on all apples is quickly absorbed by the dry sand. Pippins kept in this manner look in the month of May and June quite fresh, having their full aroma; even the stalks have the appearance they have, when just gathered."

TRANSPLANTING APPLE-TREES.—In removing and transplanting rather large well-established apple-trees, prepare a hole large enough to admit of the roots being spread out at full length. Remove as much of the top soil as is possible without injuring the roots, and dig a trench three feet wide beyond the extremities of the latter, and deeper than they are, with the exception of perhaps obstinate tap-roof. This clear trench will afford space for properly undermining the roots, and removing the soil from amongst them with a fork. The fibres should be tied in parcels with matting, so as not to be injured whilst the operation is going on. Place the tree in its new quarters as deep as it was before, and so as the roots, when spread out regularly, may slope a little downwards; introduce a fine soil among them, and water to settle it closely. Provided the trees are guarded, an orchard will not be injured by the admission of sheep. No more air should be admitted into an apple-room, than is absolutely required. Your fruit having kept well in a dark room where neither light nor air is admitted, it is not necessary to alter the conditions.

WEIGHT AND VALUE OF EGGS.—It is most extraordinary that the varieties in the weight and value of eggs as an article of merchandize should have been so universally overlooked. So far as known, it has always been the custom everywhere to sell eggs by number, without respect to size, weight, or peculiar quality. Yet no absurdity can be greater. It has been ascertained by careful experiments recently made by the author, that, the fair average weight for a dozen of eggs is 22½ ounces. Recently, on application to a provision dealer, he made answer to the inquiry addressed to him, that he made no difference in the price of his eggs. On examination of his stock, it appeared that the largest eggs weighed 24 ounces per dozen, and the smallest only 14½ ounces. In the one case, a fraction over eleven eggs would equal the average weight of a dozen, and in the other it would require over eighteen eggs to reach the proper weight. It appeared to our mutual astonishment, that the difference in weight between the two kinds was about one-half, while the price was the same.—*Dr. Bennett's "Poultry Book."*

TREATMENT OF POTATOES FOR PLANTING.—I have observed that potatoes left in the ground during the winter are generally sound, and make the best sets. Last winter I purposely left some in the ground, having protected them from rain and frost, by throwing up deep furrows on them with the plough, and leaving the potatoe ridge like a roof. In the spring (last week in April), I transplanted them on some broken-up land that two years ago was old grass, and rich enough to grow any kind of crop without manure. The result is, that the produce is less infected than that of those treated in the ordinary way. This year I intend to leave all my potatoes, intended for sets, in the ground, and to transplant them in April next. This plan resembles autumn planting; and to carry it out thoroughly, the transplanting in the spring should be effected as soon as the land is in a proper state.—*J. J. Rowley, Rawtharne, Chesterfield.*

SCALE AND OTHER INSECTS ON TREES, SHRUBS, AND PLANTS.—The following receipt has been found very successful in destroying scale, thrips, and other insects that infest stove, greenhouse, hardy herbaceous plants, and also trees and shrubs in the open ground:—Prepare 1 hogshead of lime-water (use half a bushel of lime to this quantity of water), add 4 pounds of flower of sulphur, 6 quarts of tobacco-water, and 4 pounds of soft soap; let the whole be well mixed and incorporated together, and applied by dripping or syringing, or in the case of trees or shrubs, by squirting from an engine. Allow the composition to dry and remain on for about a week or ten days, then wash it off effectually with clean water.—*Gardeners' Record.*

GRAFTING.—The proper sorts of shoots for grafting and budding are not easily known by those not well experienced in the art. In taking shoots for buds, more especially, they sometimes make enormous blunders by cutting either too early or too late. In general the shoots ought to be of medium thickness, excepting those having slender wood, and in that case the thickest ought to be preferred; all ought to have made the greater part of their growth, in order that a considerable number of the buds on the lower parts of the shoots may be completely formed, for such only should be reserved for budding; seeing that the bark adjoining those will be also in a firmer state; for if the parts are too tender and too herbaceous when placed in the incision made in the stock, they are apt to be decomposed by the abundance of sap in the latter, which ought always to be in greater flow than that of the shoots which furnish the buds.

FOOT ROT.—Take about four ounces of the sulphate of copper, or, as it is known at the shops, blue vitriol, dissolve in a quart of rain-water. Cuttle your affected sheep, pare the hoof away from all the part affected; be sure of that, even if it takes it all off. Then apply the solution to every part of the foot, carefully and thoroughly. If well done, the cure is perfected. About a week after examine the foot, lest you may not have thoroughly pared off all the hoof from the affected part. The sheep ought to be kept in a dry pasture for a week or so after the application.

RAISINS.—These are made from grapes, either by cutting the stalk of the bunch half through when the grapes are nearly ripe, and leaving them suspended on the vine, till their watery part is evaporated by the heat of the sun, whence they are called *Raisins of the Sun;* or, by gathering the fruit when fully ripe, and dipping it in a ley made of the ashes of the burnt tendrils; after which it is exposed to the heat of the sun, or to that of an oven, till dry: the former are reckoned the finest, and are imported in boxes, others in jars, and the inferior kinds in mats, &c. Spain is the country which supplies us with the greatest quantity of this article, and Malaga the port whence they are exported chiefly. Grenada, in Spain, and Calabria, in Italy, are supposed to produce the best fruit of any port.

INFLUENCE OF THE MOON UPON THE WEATHER.—A Paris astronomer has published the results of twenty years' observations upon the influence of the moon upon the weather. From the new moon to the first quarter it rained (during the period of twenty years embraced in the calculations) 761 days; from the first quarter to the full moon it rained 845 days; from the full to the last quarter it rained 761 days; and from the last quarter to the new moon it rained 696 days. So that during the moon's increase there were 1609 rainy days, and during her increase only 1457—a difference of 152 days. This difference was more likely to have been accidental than the result of any natural cause, and the conclusion which we derive from the statement is that the moon has no influence upon the weather.

INSECTS IN FLOWER-GARDENS.—When plants or flowers are attacked by insects, the following, which is in no respect injurious to any plant, will be found an effectual remedy: To six quarts of soft water, add half a pound of black soap and a quarter of a pint of turpentine. Apply this to the stems with an ordinary paint-brush.

DESTRUCTION OF DEEP-ROOTED WEEDS.—The Council of the Royal Agricultural Society had, at a monthly meeting, their attention called to a mode, proposed in Belgium, for destroying docks, thistles, and other deep-seated weeds, by the insertion of a drop of oil of vitriol into the upper part of their root, which, it was stated, at once acted corrosively on its substance, and destroyed the vitality of the plant.

PAPER-HANGINGS.—A safe rule, with regard to paper-hangings, is to choose nothing that looks extravagant or unnatural. Regard should be had to the uses of an apartment; a drawing room should be light and cheerful, a parlour should look warm and comfortable without being gloomy; bed-room papers should be cool and quiet, and generally of a small pattern, and of such colours as harmonize with bed-furniture and other fittings. It is worth while to consider the sort of pictures to be hung on a wall; gilt frames show best on a dark ground, and dark frames on a light ground; taking care, however, to avoid violent contrasts. Borders are seldom used now; they make a room low, without being ornamental.

SLEEP.—To sleep a greater number of hours than is necessary for rest and refreshment is a voluntary and wanton abridgment of life. She who sleeps only one hour a day more than health requires, will in a life of three score years and ten, shorten her conscious existence nearly four years, allowing sixteen hours to the day. Too much sleep weakens the body, and stupifies the mind; but when we take only what nature demands, the body is invigorated, and the mind has its powers renovated.

VARNISH FOR VIOLINS OR OTHER INSTRUMENTS.—Take half a gallon of rectified spirits of wine, to which put six ounces of gum-sandrach, three ounces of gum-mastic, and half a pint of turpentine varnish. Put the above in a tin can, in a warm place, frequently shaking it, until it is dissolved; then strain, and keep it for use. If you find it harder than you wish, add a little more turpentine varnish.

WASHING OF WOOLLEN ARTICLES; AN EXCELLENT WAY.—It is a common complaint that woollen articles thicken, shrink, and become discoloured in washing. The complaint applies both to the lighter articles of knitted wool, such as shawls &c., and to thicker and heavier materials—table baizes, carpets, and men's woollen garments. The difficulty in either case may be obviated by strict attention to the method about to be explained. To clear the way, it may be well first to point out some things which *never* ought to be done, but which frequently, perhaps generally, are done :—Woollen articles are never to be washed in hard water, nor in water softened by soda, potash, or anything of that kind. Soap even should never touch them. They are never to be rubbed at all. They are never to be put in lukewarm water for washing, nor in cold water for rinsing. They are never to remain lying still in the water a single minute. They are never to be wrung. When taken out of the water, they must not be laid down at all, before the process of drying is commenced, nor at any time afterwards until they are perfectly dry. Now, what is to be done? Let the things to be washed be first well brushed and shaken, to get rid of the dust. Before the woollen things are wetted at all, take care to have everything that will be required ready and within reach. If several things are to be done, let each be begun and finished separately. This makes no difference in expense or trouble. A smaller vessel and smaller quantity of lather will suffice, and the stuff in which one article has been washed would do no good, but harm, to others: it is, in fact, good for nothing. Use only fresh rain water, or very clear river water; rain is preferable. With a piece of sponge or old flannel, rub up a very strong lather of either soft soap or best yellow soap. For very large greasy things, the lather may be made of ox-gall, half a pint to six quarts of water, whisked up with a handful of birch twigs (like that old fashioned thing, a rod). In either case the lather may be prepared with a small quantity of water, and the remainder added, boiling hot, the moment before using it. The whole should be as hot as the hand can bear it; the hotter the better. If the articles are very dirty, two lathers will be required in succession; and unless a second person is at hand, to rub up the second while the first is being used, both had better be prepared in separate vessels before the wools are wetted, leaving only the boiling water to be added. Take the article to be washed, and without leaving hold of it, keep on dipping and raising, dipping and raising, for two or three minutes. By that time the lather will be absorbed by the wool, and the liquor will resemble slimy suds. Squeeze the article as dry as may be, without wringing it. The second lather having been brought to the same heat as the first, proceed in the same manner, dipping and raising. N.B.—If the article was very little soiled, and after the first washing appears quite clear and clean, the second washing may be in hot water without soap. Whether lather or water only, a blue-bag may be slightly drawn through before the second washing. When gall has been used, a third washing in hot water only will be required to take off the smell. Having again squeezed the article as dry as may be, for the lighter things, such as shawls, &c., spread it on a coarse dry cloth, pulling it out to its proper shape; lay over it another coarse dry cloth, roll the whole up tightly, and let it remain half an hour. This rule does not apply to large heavy things; they must be hung out at once.

SOFT SOAP.—Bore some holes in your ley-barrel; put some straw in the bottom; lay some unslaked lime on it, and fill your barrel with good, hard, wood ashes: wet it, and pound it down as you put it in. When full, make a basin in the ashes and pour in water; keep filling it as it sinks in the ashes. In the course of a few hours the ley will begin to run. When you have a sufficient quantity to begin with, put your grease in a large iron pot; let it heat: pour in the ley; let it boil, &c. Three pounds of clean grease are allowed for two gallons of soap.

USES TO WHICH TOBACCO OF ENGLISH GROWTH MAY BE APPLIED.—1. To florists, for two elegant annual plants to decorate the borders of the flower-garden; or, on account of their height, to fill up vacant places in the shrubberies; or, when put into pots, they will be very ornamental in the green-house during the winter. — 2. Kitchen-gardeners would, in a few days, lose their crops of melons, if not immediately fumigated with tobacco-smoke, when attacked by the red spider; and it is useful to destroy the black flies on cucumbers in frames. — 3. Fruit-gardeners. When peach and nectarine-trees have their leaves curled up, and the shoots covered with smother-flies, or the cherry-trees have the ends of the shoots invested with the black dolphin-fly, canvass, pack-sheets, or doubled mats, nailed before them, and frequently fumigated under them, will destroy those insects. —4. Forcing-gardeners, who raise roses and kidney-beans in stoves, can soon destroy the green-flies which cover the stalks and buds of roses, and the insects which appear like a mildew on kidney-beans, by the assistance of the fumigating bellows.—5. Nurserymen. When the young shoots of standard cherry-trees, or any other trees, are covered with the black dolphin-flies, an infusion is made with the leaves and stalks of tobacco; a quantity is put into an earthen-pan, or small, oblong wooden trough; one person holds this up, whilst another gently bends the top of each tree, and lets the branches remain about a minute in the liquor, which destroys them.—6. Graziers, when their sheep are infected with the scab, find relief from making a sheep-water with an infusion of the leaves and stalks. Moles, when only a few hills are at first observed, may probably be soon driven out of the ground by fumigating their holes.—7. Herb tobacco is also greatly improved by having some of the leaves, when dried, cut with a pair of scissors, and mixed with the herbs in any quantity you may think proper, according to the strength you require, and save you the expenses of buying tobacco. The herbs generally used for this purpose are colt's-foot and wood betony-leaves, the leaves and flowers of lavender, rosemary, thyme, and some others of the like nature.

WINE JELLY.—Soak four ounces of gelatine in one quart of cold water, for half an hour. In the meantime, mix with two quarts of cold water, six table-spoonfuls of brandy; one pint of white wine; six lemons, cut up with the peel on; the whites and shells of six eggs, the whites slightly beaten, the shells crushed; three pounds of white sugar; then mix the gelatine with the other ingredients, and put them over the fire. Let it boil, without stirring, for twenty minutes. Strain it through a flannel-bag, without squeezing. Wet the mould in cold water. Pour the jelly in, and leave it in a cool place for three hours.

HOUSEKEEPING ECONOMY.—It is often a matter of great convenience as well as of economy, to give a new and presentable form to the remains of dishes which have already appeared at table: the following hints may, therefore, be not unacceptable to some of our readers. Calf's-feet jelly and good blanc-mange are excellent when just melted and mixed together, whether in equal or unequal proportions. They should be heated only sufficient to liquify them, or the acid of the jelly might curdle the blanc-mange. Pour this last, when melted, into a deep earthen bowl, and add the jelly to it in small portions, whisking them briskly together as it is thrown in. A small quantity of prepared cochineal—which may be procured from a chemist's—will serve to improve or to vary the colour, when required. Many kinds of creams and custards also may be blended advantageously with the blanc-mange, after a little additional isinglass has been dissolved in it, to give sufficient firmness to the whole. It must be observed, that, though just liquid, either jelly or blanc-mange must be as nearly cold as it will become without thickening and beginning to set, before it is used for this receipt. A sort of marbled or Mosaic mass is sometimes made by shaking together, in a mould, remnants of various coloured blanc-manges, cut nearly of the same size, and then filling it up with some clear jelly. When a small part only of an open tart has been eaten, divide the remainder equally into triangular slices, place them at regular intervals, round a dish, and then fill the intermediate spaces, and cover the tart entirely, with slightly-sweetened and well-drained whipped cream.

JOHNNY CAKES.—Sift a quart of corn meal into a pan; make a hole in the middle, and pour in a pint of warm water. Mix the meal and water gradually in a batter, adding a teaspoonful of salt; beat it very quickly, and for a long time, till it becomes quite light; then spread it thick and even on a stout piece of smooth board; place it upright on the hearth before a clear fire, with something to support the board behind, and bake it well; cut it into squares, and split and butter them hot. They may also be made with a quart of milk, three eggs, one teaspoonful of carbonate of soda, and one teacupful of wheaten flour; add Indian corn-meal sufficient to make a batter like that of pan-cakes, and either bake it in buttered pans, or upon a griddle, and eat them with butter.

BLUE WASH FOR WALLS.—Take one pound of lump blue vitriol; pound it in a stone mortar as fine as possible; dissolve it in a quart or two of hot water. Slake about a quarter of a peck, or perhaps a little more of lime, and, when *cold*, pour in the blue water by degrees, and make it whatever shade you desire. The lime must be slaked, and the vitriol dissolved in earthen or stoneware, and the whole mixture stirred with a metal spoon. If wood is used for any of the above purposes, the colour will be changed. A new brush should also be used to put it on the walls, and they must first have a coat or two of whitewash, to destroy all smoke and other impurities.

ARTIFICIAL TEETH.—Since the introduction of artificial teeth, which has enabled many to continue the mastication of solid food to a period of life at which they otherwise must have swallowed it whole, longevity is on the increase. Whether the dentist is really to claim this fact as the triumph of his art, or whether it be due to a generally improved system of hygiene, we will not discuss; but, as mastication is so absolutely necessary, even to the strong and healthy stomach, we may fairly suppose that some years are added to the lives of those who are thus enabled to save distress to the other digestive organs, when, by age, they have naturally lost some of their power.

WHITE-WASHING THE TRUNKS OF TREES.—Being one day upon a visit (observes Mr. Northmore, who recommends this experiment) at my friend's near Yarmouth, in the Isle of Wight, I remarked that several of the trunks of trees in his orchard had been covered with white-wash; upon inquiring the reason, he replied that he had done it with a view to keep off the hares and other animals, and that it was attended not only with that good effect, but several others, for it made the rind smooth and compact, by closing up the cracks; it entirely destroyed the moss; and as the rains washed off the lime, it manured the roots. These several advantages, derived from so simple a practice, deserve to be more generally known. The white-wash is made in the usual manner with lime, and may be applied twice, or oftener if necessary.

RULES OF DIET.—No one can make rules for another as to the articles of diet which will agree with her. To the healthy all things naturally eaten are wholesome, if taken at proper times and in moderate quantities; those who are oppressed by their food must find out for themselves what agrees best with them, and what causes disturbance. When once you have ascertained clearly that a certain kind of food disagrees with you, avoid it resolutely: for there is no more despicable folly than that of indulging your palate at the expense of your health. Do not even suffer your politeness to betray you into any indiscretion of this sort; but let your reasonable self-denial be proof against the unreasonable importunity of those who show their hospitality by making war upon the health of their friends.

ORIGIN OF THE COUNTRY DANCE.—The French country dances, or contre-dances (from the parties being placed opposite to each other), since called quadrilles, (from their having four sides) which approximate nearly to the cotillon, were first introduced to France about the middle of Louis Fifteenth's reign. Previously to this period the dances most in vogue were La Perigourdine, La Matelotte, La Pavane, Les Forlanes, Minuets, &c. Quadrilles, when first introduced, were danced by four persons only: four more were soon added, and thus the complete square was formed; but the figures were materially different from those of the present period.

STREET ETIQUETTE.—It is customary to remove the hat upon meeting a person to whom you would show the best courtesy. But it is not a necessary observance; the habit of merely bowing being pursued by many persons of good taste. The several modes of salutation may be said to possess different qualities, and should be adopted with due regard thereto. A bow is a respectful and somewhat unfamiliar recognition; raising the hat indicates a higher degree of respectful feeling; the presentation of the hand is an indication of friendship, &c.

PASTILLES.—There are various modes of making pastilles. The following are approved recipes:—1st. Take of powdered gum benzoin 16 parts; balsam of tolu, and powdered sandal wood, of each 4 parts; linden charcoal, 48 parts; powdered tragacanth, and true laudanum, of each 1 part; powdered saltpetre, and gum arabic, of each 2 parts; cinnamon-water, 12 parts. Beat into the consistence of thick paste, and having made into shape, dry in the air. —2nd. Gum benzoin, olibanum, storax, of each 12 oz.; saltpetre, 9 oz.; charcoal, 4 lbs.; powder of pale roses, 1 lb.; essence of roses, 1 oz. Mix with 2 oz. of gum tragacanth dissolved in a quart of rose water.—3rd. The same formula may be varied by the substitution of pure orange powder for the roses, and oil of neroli for the essence of roses.—4th. By adding a few grains of camphor to the first recipe, a pastile suited to an invalid's chamber is prepared. If the scent of the above seems too powerful, the proportions of saltpetre and charcoal may be increased. Never use musk and civet in pastilles.

AGE OF A HORSE.—Every horse has six teeth above and below; before three years old he sheds his middle teeth; at three he sheds one more on each side of the central teeth; at four he sheds the two corner and last of the fore teeth. Between four and five the horse cuts the under tusks; at five will cut his upper tusks, at which time his mouth will be complete. At six years the grooves and hollows begin to fill up a little; at seven the grooves will be well nigh filled up, except the corner teeth, leaving little brown spots where the dark brown hollows formerly were. At eight the whole of the hollows and grooves are filled up. At nine there is very often seen a small bill to the outside corner teeth: the point of the tusk is worn off, and the part that was concave begins to fill up and becomes rounding, the squares of the central teeth begin to disappear, and the gums leave them small and narrow at the top.

SMOKE FROM GAS LIGHTS—It is pretty generally imagined that the smoking of ceilings is occasioned by impurity in the gas, whereas, in this case, there is no connexion between the deposition of soot and the quality of the gas. The evil arises either from the flame being raised so high that some of its forked points give out smoke, or more frequently from a careless mode of lighting. If, when lighting the lamps, the stopcock be opened suddenly, and a burst of gas be permitted to escape *before* the match be applied to light it, then a strong puff follows the lighting of each burner, and a cloud of black smoke rises to the ceiling. This, in many houses and shops, is repeated daily, and the inevitable consequence is a blackened ceiling. In some well-regulated houses the glasses are taken off and wiped every day, and before they are put on again the match is applied to the lip of the burner, and the stopcock cautiously opened, so that no more gas escapes than is sufficient to make a ring of blue flame; the glasses being put on quite straight, the stopcocks are gently turned, until the flames stand at three inches high. When this is done few chimney-glasses will be broken, and the ceilings will not be blackened for years.

OFFERS OF MARRIAGE.—If the offer is made in writing you should reply to it as soon as possible; and having, in this case, none of the embarrassments of a personal interview you can make such a careful selection of words as will best convey your meaning. If the person is estimable, you should express your sense of his merit, and your gratitude for his preference, in strong terms; and put your refusal of his hand on the score of your not feeling for him that peculiar preference necessary to the union he seeks. This makes a refusal as little painful as possible, and soothes the feelings you are obliged to wound. The gentleman's letter should be returned in your reply, and your lips should be closed upon the subject for ever afterwards. It is his secret, and you have no right to tell it to any one; but if your parents are your confidential friends on all other occasions, he will not blame you for telling them.

CLEANING OIL PAINTINGS.—Soluble varnishes, such as sugar, glue, honey, gum arabic, isinglass, white of egg, and dirt generally, may be removed by employing hot water. To know when the painting is varnished or coated with such materials, moisten some part with water, which will become clammy to the touch. To clean the picture, lay it horizontally upon a table or some convenient place, and go over the whole surface with a sponge dipped in boiling water, which should be used freely until the coating begins to soften; then the heat must be lowered gradually as the varnish is removed. If, however, the coating is not easily removed, gentle friction with stale bread-crumbs, a damp linen cloth, or the end of the forefinger, will generally effect it, or assist in doing so. White of egg may be removed (if not coagulated by heat), by using an excess of albumen (white of egg, and cold water; but if coagulated, by employing a weak solution of a caustic alkali, as potash.

TIMES OF TAKING FOOD.—Nature has fixed no particular hours for eating. When the mode of life is uniform, it is of great importance to adopt fixed hours; when it is irregular, we ought to be guided by the real wants of the system as dictated by appetite. A strong labouring man, engaged in hard work, will require food oftener and in larger quantities than an indolent or sedentary man. As a general rule, about five hours should elapse between one meal and another—longer, if the mode of life be indolent; shorter, if it be very active. When dinner is delayed seven or eight hours after breakfast some slight refreshment should be taken between. Young persons when growing fast require more food, and at shorter intervals, than those do who have attained maturity. Children under seven years of age usually need food every three hours; a piece of bread will be a healthy lunch, and a child seldom eats bread to excess. Those persons who eat a late supper should not take breakfast till one or two hours after rising. Those who dine late, and eat nothing afterwards, require breakfast soon after rising.

SMALL FEET.—Good sense must tell that all attempts to render the feet cramped and small are injurious. A celebrated surgeon of the present day has said, that it is the rarest thing to find a foot the bones of which have not been injured by this practice. He says, the foot is constructed on the principle of a double arch, one lengthwise and the other crosswise; when the foot is raised, the ends of the arches contract; when it is on the ground, and the weight of the body rests upon it, they expand, and the arches become nearly flat; and unless there is in the shoe ample room for this expansion, some part of the delicate structure must be injured. The frequent complaints we hear of inflammation and pain in the joints are occasioned by shoes made too tight to allow this necessary play of the foot. All the misery of corns is produced in the same way; and much of the bad walking we see is referable to the same cause. Now this practice is doubly foolish, because it not only produces much bodily suffering, but it misses of the object for which that severe penalty is incurred. However pretty we may think little feet, there is no beauty in a large one crammed into a shoe too small for it. The moment the shoe looks stuffed, and the instep seems to be running over it, the size of the foot is more apparent than it would be in a larger shoe; the aim of the wearer is defeated, and the torture is borne in vain. Shoes that are too narrow make the foot look like something rolled up and stuffed into them; they destroy all form and comeliness and render the step tottering, as if the soles of the feet were round instead of flat.

AGE OF FOWLS.—The age of the domestic cock varies from seven to ten years. They have been known to live longer than this. Buffon, indeed, asserts that they may reach twenty years; but, unfortunately for them, we have no interest in preserving their life for any long time, and it is only by some rare accident they are allowed to die of old age. Aged fowls are readily recognised by their listlessness, the few eggs they lay, the great length of the period of moulting, the length of the spurs, which are also found on the females, as well as the disposition to crow, and the roughness of the feet and combs.

ENAMEL OF TEETH.—Very near the gums of people, whose teeth are otherwise good, there is apt to grow a false kind of enamel, both within and without; and this false enamel or tartar, if neglected, pushes the gum higher and higher, till it leaves the fangs of the teeth quite bare above the true enamel, so that the sound teeth are destroyed, because the gum has forsaken the part which is not sheathed or protected in consequence of such neglect. This false enamel must therefore be carefully scaled off; for the gum will no more grow over the least particle of the enamel than the flesh will heal on the point of a thorn.

POT CULTURE OF THE VERBENA. — To have good plants, select in April healthy cuttings of the present year's growth, which will soon root with a little bottom heat. When rooted, pot off into four inch pots, and replace them where they previously were for a few days, when they may be removed to a cool frame to be gradually hardened. Then shift into six or seven inch pots, and place them where they are to bloom. Water at this stage may be given by syringing them in the evening; and as they get established in their pots more water will be required. Rain-water is preferable, but whether it is spring or rain, let it be well exposed to the atmosphere, and take care to have it of the same temperature as the house the plants are in. As soon as they commence to grow freely, pinch out the tops of the leading shoots. When the lateral eyes have broken sufficiently, thin them out to five or six; as soon as they require support, let them be tied to neat stakes at a proper distance, so that light and air may act on every leaf. If early blooms are not wanted, it will strengthen them very much if they are divested of all trusses as soon as such appear, until the plants get a little advanced. Weak manure water, free from all sediment, may be given once a week, and when the pots get full of roots twice a week, which will greatly invigorate them. Decaying trusses should be cut off as soon as the pips begin to drop, and the plants be frequently turned round. When aphides make their appearance, recourse must be had to fumigation with tobacco immediately. A calm evening is best suited for this operation, and two gentle smokings on successive evenings will be found the most effectual. Should mildew make its appearance, dust the affected parts with flower of sulphur the moment the least speck is observed. The soil used for verbenas is equal parts of turfy loam, leaf mould, and cow-dung (the latter rotted to a black mould), with a small portion of fine river sand, used as rough as the potting will permit. By the above mode I have grown about 150 pots annually for a number of years back, from which we have cut a great supply of fine flowers, from July to the end of October.

TEA.—The principal varieties of black teas are bohea, congou, campoi, souchong, caper, and pekoe. The last-mentioned one is the best. It is prepared from the unexpanded leaf-bud. Bohea is the lower grade of black tea. To the green teas belong twankay, hyson-skin, hyson, imperial, and gunpowder. The gunpowder here stands in the place of the pekoe, being composed of the unopened buds of the spring crop. Imperial hyson and young hyson consist of the second and third crops. The light and inferior leaves, separated from the hyson by a winnowing-machine, constitute hyson-skin. The peculiar flavour of tea depends on the volatile oil, which is lighter than water, and has a lemon-yellow colour, and the taste and smell of tea. Alone, it acts as a narcotic; but in combination with tannin, as a diuretic and diaphoretic. It is extracted from tea by hot water, in which, however, it is not always equally soluble, its solubility being modified by the other constituents.

HONEY BEES.—Nearly everybody supposes that the bee culls honey from the nectar of the flowers, and simply carries it to its cell in the hive. This is not correct. The nectar it collects from the flower is a portion of its food or drink: the honey it deposits in its cell is a secretion from its mellific or honey-secreting glands (analogous to the milk-secreting gland of the cow and other animals). If they were the mere collectors and transporters of honey from the flowers to the honey-comb, then we would have the comb frequently filled with molasses, and whenever the bees have fed at the molasses hogshead. The honey-bag in the bee performs the same functions as the cow's bag or udder, merely receiving the honey from the secreting glands, and retaining it until a proper opportunity presents for its being deposited in its appropriate storehouse, the honey-comb. Another error is, that the bee collects pollen from the flowers accidentally, while it is in search of honey. Quite the contrary is the fact. The bee, while in search of nectar, or honey, as it is improperly called, does not collect pollen. It goes in search of pollen especially, and also for nectar. When the pollen of the flower is ripe, and fit for the use of the bee, there is no nectar; when there is nectar, there is no pollen fit for its use in the flower. It is generally supposed, also, that the bee collects the wax with which it constructs its comb from some vegetable substance This is also an error. The wax is a *secretion* from its body, as the honey is; and it makes its appearance in small scales or flakes, or under the rings of the belly, and is taken thence by other bees, rendered plastic by mixture with the saliva of the bees' mouths, and laid on the walls of the cell with the tongue, very much in the way a plasterer uses a trowel.

DISEASE OF POULTRY.—Before proceeding to the treatment of disease, it must be premised that "prevention is better than cure," consequently a few general remarks on poultry-houses, yards, and general treatment, will not be out of place; indeed, attention to these particulars alone, has, in many instances, effected a perfect cure, where there was every symptom of positive disease. Let, then, your poultry-house have, as near as may be, a south aspect, its site be dry—it may be made so by draining,—the building itself as secure as possible from vermin, and well ventilated, and the yard, if on a wet soil, dug out at least a foot and-and-a-half deep, and formed of ballast, or brick rubbish, covered with good binding gravel, well levelled, and so arranged that wet shall not remain upon it, and that it may admit of frequent sweeping. In order to prevent the fowls, and chicks especially, from being annoyed by insects, clean out the house frequently, and never forget to do the same with the nest-boxes, which are their principal hiding places, and twice or thrice a year limewhite the inside thoroughly. Somewhere, under cover, have a large shallow box filled with wood-ashes and dry sand in which your birds may dust themselves, which you will find them often doing. Mind! *wood*-ashes, not coal, as the former purify, while the latter soil and spoil, especially birds of light plumage. If you have perches or roosts at all, let them be broad and smooth—narrow ones injuring the breast-bone. For my own part, I prefer having no roosts; but the floor covered with clean straw, or other dry litter, well shaken up every day. Besides good corn and that not of one kind continually, but varied, give them a good supply of green food regularly, particularly if they have not free access to a small orchard or paddock. In fine, treat them not as *graminivorous* only, but as *omnivorous*, which will greatly tend to health.

PLANTING BOX FOR EDGINGS.—The operation of planting box has ever been considered one in which much practice is needed; that it is a labour of time and inconvenience, even to the experienced labourer, as usually performed, we will not deny; the simple process here recommended saves the one and eases the other to an extent which only needs to be known to be generally practised. The usual mode, after forming the trench and inner edge, is to place the strips or tufts of box one by one along the length to be planted, securing the same from time to time by pressing the excavated soil against the roots, the tips being regulated to a line stretched for the purpose. This involves an amount of kneeling and stooping both painful and injurious. Having provided your box, and prepared it in the usual way ready for planting, it is simply necessary to have a few strips of deal, four, five, or six feet long, say half an inch thick by an inch wide, or common pantile laths cut into lengths will answer the end; some shreds of matting or thin string are also required. With these inexpensive and simple materials you can prepare any number of yards in the potting-shed, house, or other building, by laying one strip of wood on the bench or table, on which arrange the prepared box, thin or thick, as desired; then place a second strip of deal on the box, and secure the two strips together by tying at each end; thus is the box secured, as it were, between a clamp, and cannot fail to be even. Place these lengths along the bed or border, and secure them by pressing the soil to the roots with your spade or rake, which done, cut the ties; thus are the laths released from the box, and lengths in *feet* planted with as much despatch as *inches* by the ordinary method, and with an amount of regularity and evenness not attainable by the usual plan, at the same time avoiding the painful, back aching process of kneeling for hours while planting but a few yards.

DWARF PLANTS.—Choose the time when the tree is in flower, and select a branch, preferring that which is most fantastic and crooked. By two clean circular cuts, about an inch of bark is removed all round the stem, and earth is applied to the wound, and made to press upon it by a piece of cloth. This application is kept moistened until roots are formed at the incision, when the branch is removed, is potted, and thus becomes an independent tree. As the process is only a substitution of a part for the whole, it cannot properly be called *dwarfing;* great care and skill, however, are required for its successful accomplishment. In China, where the process originated, the trees most commonly thus treated are the dimocarpus, litchi, the favourite fruit of the country; the carambol, with its octagonal fruit; the longan, a kind of plum; the orange, apple, pear, &c. The great rule to be observed is, to confine your operations to plants of a succulent nature, or, in other words, such as are least dependent upon soil and water. That we may be as popular as possible, we may mention cactuses, and mesembryaceæ, or ice-plants, as illustrations of what we mean. Small shoots of different varieties of these and similar families of plants must be taken off and rooted in the usual way, and afterwards removed to the small pots intended for them. It is evident that when the space is so small, great attention should be paid to the soil and drainage. The latter will be best secured by potsherds broken to the size of a small pea, and placed to the depth of the third of an inch in the bottom of the pot. The soil should be porous, composed of white sand, leaf-mould, and a portion of pounded crocks, still finer than that used for the lower drainage. As *growth* is to be deprecated in these tiny specimens, no more moisture must be afforded than is sufficient to secure health.

GRAVEL WALKS.—Take the brine from a salting tub, and having put to it three parts of soft water, pour it on your gravel walks: it will not only kill moss, but effectually destroy worms, and also prevent weeds springing up. Be careful, however, not to do this if the borders are edged with box, which the brine will destroy; it is only available when the walks are bounded with slate or some other material.

LEFT-HANDED CHILDREN.—Children are apt to accustom themselves to use the left hand more readily than the right, and so become what is termed left-handed. Left-handedness is always a mark of careless nurture; for no species of imperfection may be so easily guarded against. When the child begins to use a spoon, or to handle any object, let care be taken to make it use the right hand chiefly, and also accustom it to shake hands only by that hand. By these means it will soon learn that the right is the proper hand to employ, and in this respect will grow up faultless.

NATURE OF HAIR.— The hair, when naturally white, or of a very light flaxen, as is often the case in children, and in some adults, contains phosphate of magnesia, which ultimately disappears in children, when their hair gradually darkens as they advance in age. The colouring oil of black hair is of a dark green, which becomes lighter in the different shades from black to light brown. The colouring principle of red hair is red; that of yellow hair a modification of red; that of auburn hair a mixture of red and dark green; that of white and flaxen hair is almost without colour.

FOOD FOR SINGING BIRDS.—The following is said to be superior to the German paste in common use. Knead together three pounds of split peas, ground or beat to flour; one pound and a half of fine crumbs of bread and coarse sugar, the fresh yolks of six raw eggs, and six ounces of unmelted butter. Put about a third part of the mixture at a time in the frying-pan over a gentle fire, and stir it continually till it be slightly brown, but by no means burnt. When the other two parts are done also, and all become cold, add to the entire quantity six ounces of maw-seed, and six pounds of good hemp-seed, bruised and separated from the husks. Mix the whole well together, and it will be found an excellent food for thrushes, red robins, larks, linnets, canary-birds, finches of the different sorts, and most other singing birds, preserving them admirably in song and feather.

BED-CURTAINS UNWHOLESOME.—The practice of enclosing the bed with curtains is opposed to healthy sleep. In many cases the material used is so thick and porous as to imbibe the rising exhalations, and otherwise prevent the free circulation of air. It would be in vain to have lofty, well-ventilated apartments if this practice is continued. All the purposes for which curtains are required, viz., the prevention of drafts and exposure, are equally answered by having a curtain across the room or on one side of the bed, without having the roof covered and curtains drawn so closely round that the sleepers are enclosed in as small a space as possible. The fact that if a caged bird be hung up in the interior of a bed enclosed with curtains, either during the night or shortly after the sleepers have risen, it will soon die, is a sufficient proof that the air is so vitiated that it is not fit for the support of life, and shows the necessity of providing for its escape and constant renewal. Iron bedsteads are preferable to wood in promoting cleanliness; there is not so much harbour for dust, and consequently for vermin; and, when japanned, they are most easily washed and kept clean.

A VERY REVIVING ODOUR.—Fill with recently-gathered and dried lavender flowers, stripped from their stalks, small wide-necked scent-bottles, and just cover them with strong acetic acid. A morsel of camphor, the size of a hazel-nut, may be added, with advantage, to the lavender, in each bottle. Sound, new, and closely fitting corks should be used, to secure the mixture from the air. It is exceedingly refreshing and wholesome, and has often proved very acceptable to invalids. The lavender should be gathered for it before it is quite fully blown.

GARDENING FOR SEPTEMBER.

The Flower Garden.—This month is the period for looking over all greenhouse plants, trimming them, stirring the surface of soil in the pots, clearing them, and getting them back into their winter quarters. In this we must not fall into the common error of overcrowding; no two plants ought, under any circumstances, to touch each other. All the bottoms of the frames ought to be hard and impervious to wet, that the water given to plants may not soak in; and they should slope a little, that it may run off. Layers of carnations and picotees should be now cut from the parent plants and potted in good loam, in pots size 48, a pair in each pot, and be placed in frames for the winter. The pinks that are potted should be also put under glass, or, for want of that convenience, plunged in beds of coal-ash, saw-dust, or sand, in such a way that they may be protected with mats, or covered with long, loose litter. Auriculas grown in pots must be looked over, and relieved of their decayed stalks and yellow leaves, and at the end of this month be placed in a regular winter pit or frame. Plants in the borders, that are to be saved in pots should now be removed to the greenhouse, pits, frames, or dwelling-houses. This month may be said to be the beginning of bulb-planting for early bloom; and all the soft kinds, such as lilies, crown imperials, &c., must not be long out of the ground. Calceolarias are propagated by offsets and cuttings. Offsets should now be taken from the plants and potted; cuttings which have been struck should also be potted into single pots. Chrysanthemums to bloom in pots should now be got under glass. Tender greenhouse plants, must be housed before the month is out. Sow all kinds of hardy annuals; and if they are well up and established before the winter sets in, many will stand well. Pansies may be struck from cuttings in time to get strong before the winter sets in. Seedling flowers, and all the biennials and perennials, may be planted out if hardy, and potted if tender. Snowdrops and daffodills, and many other early bulbs, may be planted in the borders.

Fruit Garden. — Fruit must be gathered in dry weather, and, if possible, when the sun is powerful; it makes a remarkable difference in the period of their keeping. Never drop them, for the slightest bruise will cause premature decay The rule for gathering should be when the pips begin to colour slightly.

Kitchen Garden. — Potatoes that are ripe may be taken up and stored: they are always ripe when the haulm is decayed. They may be stored in a dry cellar, covered over with straw, or in pits heaped up and covered over with straw and mould, but never in large bodies. Onions as they ripen must be drawn and dried in the sun on the ground for a day or two; they should be stored very dry and cool, and where they have free air. Earth up celery, choosing dry days for this work, and bruising the lumps of soil small. Cauliflowers: prick out the August sown ones; the warmest and best place in the garden should be chosen if they are only to be protected in the ground; but if you have a common garden-frame and light to spare, plant them three or four inches apart under it. Plant out, in any spare ground, cabbage plants, six inches apart, and in rows fifteen inches apart, to be drawn as coleworts. Hoe winter spinach, removing them where too thick, and leaving them six or eight inches apart. Seeds should be gathered as they ripen. Let them be well dried. Sow salads every month, if there be a demand to supply. Plant cabbages out in all empty spaces not likely to be wanted for other crops. Carrots and parsnips may be taken up as required, until the leaves turn yellow, when they may be all taken up and stored. Asparagus is recommended by most professional gardeners to be cut down this month; those who do not wish to exhaust their beds should perform this operation at least two months earlier. Sow radish seed; your success will depend a great deal upon the sort you sow. The farther the year advances let the radish be short-topped, or you get a quantity of leaf without any root.

A JOURNEY OF DISCOVERY ALL ROUND OUR HOUSE.

Journey Sixth.

THE DOMESTIC HEARTH, ITS ORIGIN—THE ANDIRONS AND DOGS—FLINT AND STEEL—COAL, FIRE, AND LIGHT.

In first starting on our Journey of Discovery we commenced our physiological remarks by a description of those vital organs which were the source of heat, nutrition, and respiration—the lungs, heart, and stomach; so, in like manner, we now propose, in this our concluding journey, to begin our inquiries at that centre of the house from which are diffused warmth, comfort, and ventilation, viz., the hearth, fire, and the fuel used for heat and the circulation of air.

The Hearth and the Grate, Andirons, &c.—How many cycles of years or ages passed before man thought of making any change in the hearth which nature supplied him on the bosom of the earth it would be an idle waste of time to inquire; but the sudden flooding of the habitation from rain or inundation often led to the extinction of the fire, and other discomforts consequent on its damp and exposed position.

To guard against this constantly recurring annoyance—doubly irritating during a feast or the daily preparation of food,—a contrivance was adopted, first by means of blocks of turf or stones, to raise the fire on a kind of dais or platform, to protect it from any sudden rush of water. This contrivance, called a *rere-dosse*, was not only of service in protecting the fire, but became of the utmost importance in a culinary point of view; for when thoroughly heated, its margin answered all the purposes of an oven, on which the good-wife could bake her cakes and bannocks, or simmer for the invalid the ptisan, or night posset, in her rude, unglazed pipkin. When, in course of time, flues succeeded the hole in the roof, and the fire was moved from the middle of the floor to the side of the house, the rere-dosse became the real and figurative hearthstone, which, through the innumerable changes of more than a thousand years, is still to be found in its primitive simplicity in nearly every farmhouse and peasant's cottage in the kingdom.

When wood was the only fuel, and the fire was replenished by entire fagots, or arms'-full of knotted sticks, a want was soon discovered, viz., a means of keeping the mass of flaming wood from falling among the company seated or lying round the fire. For this purpose, two tall bars of iron, with a knob at one end and sharpened to a point at the other, were used to confine the blazing wood. These "andirons," as they were called, were driven with their pointed ends into the ground, one at the back, and the other in the front of the hearth or rere-dosse. In the turbulent ages between the eighth and the sixteenth centuries, when there were neither posts nor telegraphs in the country, a kind of rude semaphore was established, by which distant parts might be apprised of threatened danger. This was effected by lighting beacon fires on all the elevated places along the coast, or inland through the country. The chief points, however, where these alarm fires were displayed were on the outer wall or donjon of some feudal castle or border keep. For this purpose a huge iron basket, round or square, and standing on metal legs, was firmly built into the highest parapet of the fortress, so as to contain the fire, cause an instant ignition, and a flame powerful enough to be seen on a dark night by the warder on the next castle; who, setting fire to his beacon, sped on the signal to the next and next, till all the marche or border was called to arms. This fire-basket, or beacon-cradle, was the prototype of all the grates and stoves which, since the introduction of coal, have been invented for economy or elegance. When the rere-dosse was moved to the side of the house, the "andirons"—such as we have described them, the two tall uprights—became useless, as the fuel then used was generally of a uniform size, consisting of billets of wood or roots, with an underlay of brushwood, called bavins, to ignite the larger fuel. To support these billets and logs, two horizontal bars of iron, each supported on four legs, were placed, one on each side of the hearth; and while the bavins were spread on the rere-dosse, the large pieces of wood were laid across the iron bars, or "dogs," as they were called, having a sort of resemblance to a long-bodied turnspit.

The transition from the primitive andirons, dogs, and beacon fire-basket of the Middle Ages to the elegant drawing-room stove of burnished steel, and the kitchen range, with its admirable system of steam accommodation, is too perfect to need a word of observation, and we shall now proceed to direct our inquiry to the article burnt, or that substance from which man, in his half-civilized condition, obtained one of his greatest animal enjoyments,—*warmth*; and then proceed to investigate the subject of—

LIGHT AND FUEL.

In tropical climes, the spontaneous combustion of the scorched herbage and dried vegetation must early have led to the knowledge of calling into existence a light or flame by the friction of dried pieces of bark, or the rapid revolution of one piece of wood in a hole drilled in a larger, as practised at the present day by the aborigines of Australia. In other localities, the breaking of stones, or the mere friction in digging, must have repeatedly led to the striking of sparks, which, falling on some withered moss or crumbling herbage, has at once instructed the savage how to procure fire by the concussion of iron and stone, whenever required: the knowledge that the closer the texture of the stone, the greater the quantity of latent fire it contained, was a discovery certain to follow on the other, till at length that magazine of fire, the flint, was discovered, and prized as one of the most valuable of domestic articles. A piece of rough iron, of a convenient size, under the subsequent name of a steel, quickly suggested itself to the reasoning faculties of the barbarian; and, slung together, these two items, the flint and steel, were entrusted to the safe keeping of the chief or patriarch of the tribe. Man's wants are ever progressive, and it was soon found that it was not enough merely to carry the implements for eliciting fire, unless a convenient means of collecting the sparks was also close at hand. Observation and ingenuity were not long in guiding reflection to a portable tinder, which far surpassed the comparatively modern invention of burnt linen. This substance, a fungous excrescence, common to the oak, ash, and some other trees, was known as touchwood or spunk, and scientifically as *agaric*. Still, though an admirable substance for receiving and spreading the sparks forced from the flint, it required considerable art, and some expenditure of breath, before the atoms of fire could be blown into a flame, a reed or tube being used like a blow-pipe to facilitate ignition. When the tinder-box was first made perfect by the addition of sulphur or brimstone matches, it is difficult to say; but in all probability it is one of the most ancient domestic articles which has come down intact to the nineteenth century. Sixty years ago, from the palace to the meanest hovel, there was not a dwelling in Great Britain that had not a tinder-box, with its extinguisher, steel, flint, and matches, complete; and now it would be less difficult to find one of those once universal household articles, a spinning-wheel, than a tinder-box.

When, about the year 1818, the instantaneous light was first invented, a number of new discoveries came out in rapid succession, in which, by means of phosphorus and other chemicals, a light was obtained, either by dipping the match in acid, striking the point suddenly, or by friction over a rough surface. Expense, however, was the great drawback of each preparation, and it was not till 1845, when the Germans, by manufacturing the common lucifer at a price that placed a box with more than a hundred matches in the possession of the most destitute, that the flint and steel may be said to have entirely gone out of use.

Having shown how our ancestors obtained fire, and the contrivances by which they kept it together, we will now glance at the materials used for fuel. Wood, of course, was the first article employed for the purpose; and being easy of access, and presented in unlimited abundance, was consumed with a waste and prodigality that knew no limit. In moorland counties and boggy districts, where timber was scant or totally wanting, man's ingenuity soon discovered a valuable substitute, surpassing even wood as a fuel—this was the light, elastic carpet under his feet, the fibrous sod over which he walked. This substance—coal in its earliest stage, and known as peat or turf—had the advantage of being easily lighted, gave out an immense body of heat, and became in certain localities then, as now, the chief—indeed, the sole article of fuel used.

COAL.

When the nobles and gentry first began to live apart from their domestics and retainers, and had their meals served in the private chamber, it was customary to use charcoal as well as cord-wood for their fires. When at length, however, the custom of cutting down the finest forest timber for the purposes of building and furniture, with the vast quantity consumed for fuel, began to desolate the land of its trees, it became necessary to find another material for building, and a new substitute for the fire. This latter was soon obtained in abundance, in what was then and long afterwards known as sea-coal,—so denominated because conveyed by water from the north of England; and though the use of the article had probably been long familiar to the hardy Northumbrians, it was not till the year 1239 that the first charter was granted by Henry III., allowing the digging of sea-coal. During the next hundred years the use of coal must have spread very generally over the kingdom, if we may judge from the number of edicts passed *prohibiting* its employment, particularly in London, the smoke being considered highly injurious to health. The public, however, had become so conscious of its value, that all restrictions on its use were powerless to check its consumption. For a long time the coal obtained was so inferior in quality, consisting principally of shale, that it could not be burnt without the assistance of a considerable amount of large wood. This objection only continued, of course, till the miners had descended far enough to reach the deep strata or main coal.

To give our fellow-travellers a just idea of the formation of coal, or the "coal measures," as they are technically called, we must go back to a period in the history of the world when the whole earth was in a transitory stage, half solid, half fluid, and the yielding morass that formed the crust of the globe was covered with vast forests of fern-like trees, and a dense undergrowth of reeds, giant rushes, and dank jungle grass; the whole, by the rich, warm slime in which they grew, and the hot, humid atmosphere that surrounded them, being drawn up with quick and rank luxuriance. If we people this voiceless wilderness, surround it by a hot and hazy atmosphere, with huge, lizard-like reptiles crawling up the trees or burrowing in the reeking slime, and vast-trunked monsters, with short legs and sucker feet, sleeping on the brink of some stagnant pool, we may form a fair idea of the earth's appearance thousands of ages before the advent of man, and picture what was the nature of that vegetation which, now converted into a mass of black, bituminous stone, we use for daily fuel. If, in imagination, our travellers will fancy some convulsion of nature in a moment overwhelming these fern-like forests, and prostrating in the slimy soil trees, undergrowth, and herbage, till the fallen vegetation is piled fathoms deep; and then, in fancy, see the whole swallowed up by some yawning earthquake, and the black ooze, reeking with pestilence, flowing over the engulfed forest, they will understand the *first stage* in nature's grand process of coal formation.

Our companions must next fancy that in the course of many ages the stagnant pool has hardened into morass and slime, and another forest has sprung up as dense and rank as the former; that this, too, in turn is overthrown and buried; and that three, four, or five such growths and convulsions of nature have taken place, and with an intermediate layer of soil between each layer of vegetation, the whole has been pressed down and buried still deeper in the bosom of the earth, and they will realize the material out of which coal is formed.

A very pertinent question will here rise to the mind of our fellow-travellers round the house,—What first induced man to mine the earth for fuel? No one could have told him he would find coal there, and he was not insane enough to hope to discover trees and vegetation in the centre of the earth. The question is so natural that we will at once attempt to reply to it satisfactorily.

It is true that the mines of Cornwall had been worked for the Phœnicians, Carthaginians, and probably for Solomon himself, two thousand years before coal was generally known in this country: but those mines were carried through the solid rock, in localities void of buried vegetation; so the knowledge of coal could not have spread from the tin mines of Cornwall. The explanation we are about to give is much more simple and natural.

After the series of fern forests had been for ages hermetically locked up in the earth, many vast upheavings of the surface took place, volcanoes were formed, mountains raised, and hills thrown up. In these earth-waves and violent eruptions, the beds of buried vegetation were in many places displaced, split, and parted by vast subterranean chasms from the rest of their strata; and while some portions sank far below their original level, others were either turned over on their edges, and forced so near the surface crust of the earth as only to be a few inches beneath the soil; while in some instances, as on the margin of hills or sides of valleys, the coal actually projected, or, as the miners term it, "cropped out of the land." Here, then, the coal was either directly visible, or in places so near the greensward, that in digging his garden or a foundation for his house, the peasant was morally certain to come upon the treasure, which, as he daily became more conscious of its value, he would naturally follow deeper into the bowels of the earth.

In this manner we believe man first acquired a knowledge of coal; for its burning properties as a fuel, he was, in all probability, indebted to an accident. Coal consists of bitumen, charcoal, and earthy matters, and is composed chemically of carbon, oxygen, hydrogen, and a small proportion of nitrogen. In the decomposition of coal, the oxygen unites with carbon, forming carbonic acid, or "*choke-damp;*" and the hydrogen, uniting with another portion of carbon, forms carburetted hydrogen — street gas, or "*fire-damp;*" which, generated in crevices of the mine, are two of the most deadly enemies the collier has to encounter in his subterranean perils.

Vegetable Coal is divided into two varieties—the brown, or lignite, and the black, or bituminous coal; the latter, the article so universally employed for fuel.

Mineral or Fossil Coal is the last or most advanced stage of the coal formation, when it has reached its highest state of perfection. As peat represents the *first* stage in the conversion of vegetable fibre into mineral coal, so fossil, anthracite, glance, stone, or cannel coal—for the names are synonymous—represents the *last*, or perfect stage of the transformation of vegetable into mineral matter. The peculiar qualities of the anthracite or mineral coal are, that it *emits no smoke*—all the bitumen having been exhausted,—throws out an intense heat, and when lighted, burns with a *clear, bright flame*, like a candle; hence one of its commonest names, that of candle or cannel coal.

Some idea of the increased consumption of coal in the United Kingdom may be formed from the few following statistics:—In 1802 the quantity of coal imported into London amounted to 872,366 chaldrons; being an *annual* increase from 1782 of nearly 10,000 chaldrons. In 1848 the product for the whole empire was 32 millions of tons; in 16 years this sum had nearly *doubled* itself, for in 1864 the amount had reached 60 million tons. This again in the six years from 1864 to 1860 had increased to 71 millions of tons.

The present amount of coal raised in Great Britain is 86 million tons, showing for several years an *annual increase* of more than 2¼ million tons. This enormous yearly consumption has naturally produced great anxiety, and much scientific inquiry as to how long the coal fields of Great Britain are likely to endure so enormous a drain on their resources. The result of this inquiry has been very various. By one estimate the amount of the coal yet in the seam in England, Scotland, and Wales, is calculated to last, even at the present drain, for eight or nine hundred years. By another computation it is reduced to three centuries; while the most disheartening estimate fixes the period of the extinction of British coal at a hundred and fifty years at the utmost. The discovery of an artificial fuel for the uses of propulsion and manufacturing purposes, and the invention of an illuminating medium from other sources than those of coal, would of course prolong the duration of our coal measures, as an article of domestic fuel only, for several centuries beyond even the most favourable estimate of its possible duration.

By assuming that it will be impossible to mine deeper than 4,000 feet, and supposing that our consumption of coal goes on steadily *increasing* at its present yearly ratio of 2¾ million tons, the latest and most reliable estimate is that the coal-fields of the United Kingdom will be utterly exhausted in TWO HUNDRED AND TEN YEARS.

HOW TO TREAT A WIFE.

We have somewhere met with a few instructions which may serve you. Patience and cheerfulness are the great requisites in married life. You may have great trials and perplexities in your business with the world, but do not therefore carry to your home a clouded or contracted brow. Your wife may have many trials, which, though of less magnitude, may have been as hard to bear. A kind, conciliating word, a tender look, will do wonders in chasing from her brow all clouds of gloom. You encounter your difficulties in the open air, fanned by heaven's cool breezes; but your wife is often shut in from these healthful influences, and her health fails, and her spirits lose their elasticity. But, oh! bear with her: she has trials and sorrows to which you are a stranger but which your tenderness can deprive of all their anguish. Notice kindly her little attentions and efforts to promote your comfort. Do not take them all as a matter of course, and pass them by, at the same time being very sure to observe any omission of what you may consider due to you. Do not treat her with indifference, if you would not sear and palsy her heart, which, watered by kindness, would, to the latest day of your existence, throb with sincere and constant affection. Sometimes yield your wishes to hers. She has preferences as strong as you, and it may be just as trying to yield her choice as to you. Do you find it hard to yield sometimes? Think you it is not difficult for her to give up always? If you never yield to her wishes, there is danger that she will think you are selfish, and care only for yourself, and with such feelings she cannot love you as she might. Again, show yourself manly, so that your wife can look up to you and feel that you will act nobly, and that she can confide in your judgment.

DELAYS.

BY ROBERT SOUTHWELL—1519.

[We copy the following verses from an old English book, and believe their promptings just as good as though they were not *two hundred and fifty-seven* years old!]

Shun delays, they breed remorse:
  Take thy time, while time is lent thee;
Creeping snails have weakest force;
  Fly their fault lest thou repent thee;
Good is best when sooner wrought,
Ling'ring labours come to nought.

Hoist up sail while gale doth last,
  Tide and wind stay no man's pleasure;
Seek not time, when time is past,
  Sober speed is wisdom's leisure:
After wits are dearly bought,
Let thy fore-wit guide thy thought.

Time wears all his locks before;
  Take thou hold upon his forehead;
When he flees, he turns no more
  And behind his scalp is naked
Works adjourned have many stays;
Long demurs breed new delays

HOME, AND ITS PLEASURES.

Is there any other word in the vocabulary of nations that is so expressive, so suggestive, so gentle, and so important in its wide signification as that which heads our article? Home! What a talisman it is, what a spell, what an invocation! Is there any heart, old or young, that does not beat responsive to the sound of that one word? Is there any brain so dull into which it does not flash with a gush of suggestive congruous fascinations? We have all had a home. Perhaps we have not all got one; but we have certainly all had one. Change of time and circumstances may have so buffeted us about the great world, that we feel too cosmopolitan; and in an easy adaptation to all places, and to all sorts of men, we lose that home feeling which makes some spot an individuality as it were, which nothing else shall be like. Perhaps there are many who, with a philosophic reach above common feeling, hold aloof from the domesticity of society, and with a self-inflicted Pariahism, if we may be allowed the expression, will not be of a home homely; but these are the eccentricities of human nature. We speak of and, we speak to the masses, and to them we say you have all homes, or you all had homes.

All men, then, have lost a home, are trying to make a home, or are striving to keep one that they have. Everybody has his or her ideal of somewhere, of some place of rest, of complete satisfaction, where the roar and the din of the great world may not enter, or if heard at all, would be esteemed for its contrast to the serenity within—a home, in fact, for without serenity there is no home. We used to think in our very young days, that the highest title that man could give to man was his most *Serene* Highness; and we now think that a man who is happy in his home, at his own fireside, with the partner of his heart smiling gently upon him, and his little children looking like shining content (as some author has it), is to all intents and purposes a *Serene Highness*. If such a one be not, why then, as Othello says, "chaos has come again."

Let us look at that busy merchant upon the mart of nations—fire in his eye, keen calculation in every muscle of his face, his brow tinted with something of the colour of the yellow ore he struggles and pants for. He has his moments when with moistened eyes and faint sighs, he thinks of his childhood's home, of his father's fireside; and when there will rise up before him the dim spectral band of past companions, of past affections—his mother's tender glance, his father's counsel, the playful tenderness of a sister's love; and in comparison with that lost home, not lost through fault or folly of his, but swallowed up in the vortex of time, he will for the moment think lightly of his bills, and bonds, and balances, his usuries, and his cash accounts, and his dream will be yet to make a home where there shall be smiles and peace.

For what is it that yonder pale student consumes the nightly oil? Is it for fame? The empty applause of those whom in his heart of hearts he holds but cheaply? Ah, no—he is striving for a home. He pictures to himself the vine-clad porch of some simple cottage, and himself upon the threshold, with the hand of her whom he loves in his, and all the world beyond them banished from their contemplation. These men, then, are striving to make a home. They may never reach the goal of their ambition. They may, when the harbour of refuge is within their sight, sink fainting by the way; or they may find that habit is as strong as this first aspiration after a home, and they go on then striving until the grave closes the account, and gives them a quiet home indeed. But still they have happiness in the pursuit, if to them it were but an ignis fatuus which they never much cared to reach.

Some are battling to regain a lost home. They have had the blessing, and treated it like a bauble, until it slipped from them, only then showing itself to them, as the shadows of adverse circumstances roll between them and it, what a jewel they have lost; and home is something akin to love, in the respect that, once lost, it is not easily recovered again. But such persons will commence their pursuits, and through the crowds of humanity, as though feasibly looking for some remembered but lost face, they will search for another home like unto the one that has left them.

Home is the revivifying spell that braces many a heart to do its duty. The mariner, on the wide ocean, as he clings to the frail spar that is alone between him and eternity, thinks of his home, and his grasp tightens, for he feels that the spirit of that holy word has given him strength. The soldier, upon the scorching plains of India, dreams of a home at last in his native land; and as the watch fire pales at his feet, he smiles as the vision of his native village rises before his mind's eye. The veriest vagrant that begs from door to door has his home, if it be but some deserted hovel into which to crawl at night, when the blasting wind is high and mighty. The home-spell is around and about us all. Give the raggedest urchin you can find in the great city an alms of unwonted amount, and ten to one but he shuffles home with it. The profane and vulgar are accustomed, when they wish that any rude blusterer, upon a public occasion, should be quiet, to advise him to go "home." Even they know that home is the kingdom of the heart; and in the thatched cottage, through which the hollow wind whistles, as well as in the gorgeous palatial pile, redolent of warmth and perfumes, the home-spell lingers, and there is no place like it.

A happy home! Oh, what a spell there is in the words! Can human ambition point to a higher hope than that, unless it abandons this great sphere and fixes its gaze upon immortality? And after all, what is immortality, and the God-like hope of Christianity, but a happy home for ever? Is there anything in the wide world so gracious to heart as the home fire-side? Home-voices, their sights and sounds? Home tears ever have in them a redeeming joy that makes them all but celestial

The man who, with humble means and quiet wishes,—the man with a mind attuned to the harmonies, and to the beauties of nature, who has a home, where envy and unthankfulness find no place, where dear domestic love and gentleness are the presiding angels, is indeed a Serene Highness; and long may he continue so, and may our happy country be ever celebrated as the land of Home and Hearts.

CANDLES.

The manufacture and introduction of candles amongst the domestic conveniencies of life have been in a manner no less productive of refinement in the taste and habits of communities than were those of soap and glass; and although the time at which they were first used is not exactly known, yet their consumption has been daily extending more and more, particularly of late years, notwithstanding the many and refined means devised by the inquiring spirit of the time to illumine the hamlet as well as the metropolis, the dwelling of the humble mechanic as well as the court of the monarch.

From the remotest period substitutes have been found for supplying by art the place of the great luminary of day during the intervals of his absence; it appears, however, that not candles, but lamps, were generally used, in which oil was contained in the way that suggested itself as most convenient. In Holy Writ many references are made to candles and candle-sticks; and conformably to the idea now attached to those terms, a person might suppose that the manufacture was no novelty in those remote ages; but, upon further consulting the same sacred record, it will be observed that these terms were used either in a metaphorical sense, or otherwise the translators have been at fault in rendering the meaning of a word in the Oriental tongue by one which does not express the same in modern languages; for, that the candlesticks were intended to support lamps, not candles, is plain from he instructions Moses received from the Almighty for making the golden candlestick:—"And thou shalt make the seven lamps thereof, and they shall light the lamps thereof, that they may give light over against it." Further testimonies, showing that olive oil was employed for those lamps, may be found in the book of Leviticus, from which, as well as from the foregoing, it is plain that candles were not in use among the ancient Jews. The authors of Greece and Rome were equally ignorant of the candle, and although Pliny and other writers mention it, yet the only information to be gathered from them is, that their candle consisted of strings of flax, imbued or covered over with pitch or wax.

THE STEREOSCOPE AND THE DAGUERREOTYPE.

As far back as 1838, Professor Wheatstone announced a remarkable discovery in binocular vision (sight with two eyes), which had the effect of deceiving the senses so completely, that mere drawings, seen under peculiar circumstances, were converted into solid and projecting bodies. Since then the ingenious discovery has been modified, and much improved by Sir David Brewster. This, however, had not the effect of bringing the wonders of the discovery prominently before public notice; and it was not until it had received the publicity of the Exhibition, and the assistance of a talented photographer in adapting his art to the discovery, that the nature and value of the stereoscope became at all understood, at least, beyond the circle of a few scientific societies. No language can convey an adequate idea of the wonderful discovery. It may be observed, however, that the stereoscope somewhat resembles, in appearance, a double opera-glass. Two pictures of a person or group of persons taken at slightly different angles (so as to correspond as near as possible with the different angles of the eyes), are required to produce the illusion of solidity. The two upper glasses of the Stereoscope, which we place to the eyes, form a sort of squint and it is well known that under such circumstances, two objects are seen as three, by the same rule that one is seen as two. So with the stereoscope; the two pictures of the one object are converted into three; only one, however, is seen, and that (by the reflected images of the two falling at the same time upon either eye) as a perfect solid projecting body, or series of distinct bodies, according to the subject introduced in the picture. Imagine a family group of five or six persons so represented, each one, to the sight, is separated from the other with a perfect roundness and fulness of nature. Length, breadth, thickness, and distance from each other are each distinctly visible; and if the group be taken from the middle of the room, so is it found through the stereoscope, each figure standing alone, forward and detached from the wall or groundwork of the picture. The space behind is clearly seen, and if one of the persons represented be holding forward a book or other article, it is not seen flat as in a picture, but round and forward as in a model, so that the eye can easily mark the distance of the body from the book, and *vice versa*. To produce this astonishing illusion through the stereoscope, it is necessary that the utmost accuracy and delicacy of touch should be observed in the two pictures to be viewed. They must be taken also at the exact angles, so that their reflected images may fall on either eye, consequently daguerreotype pictures are peculiarly adapted for the instrument. Daguerreotype pictures are necessarily exact in every respect; being a work of nature it cannot possibly err; and hence it is that the astonishing discoveries of Wheatstone and Brewster remained in comparative abeyance until M. Claudet came forward and applied his beautiful productions to the instrument. Let any family at the present time sit for stereoscopic Daguerreotype pictures in a group or singly (for the discovery is now being extensively applied to portraiture), and their great *great* GREAT grandson's children may as easily see them in youth, life, expression, and *almost* movement, as their own immediate circle of acquaintances.

EGGS.

We hear a great deal of talk about the money which is sometimes paid for eggs of choice kinds of poultry for the purpose of incubation, and intend very soon to join the hue and cry, and talk about it too; but when we consider the ease with which *productive* fowls might be procured and kept, the price often given for new-laid eggs, for eating and domestic purposes, is a matter much more astonishing. The attention of farmers has lately been repeatedly called to this subject, and some few are giving it the notice which it so much merits. Poultry is a kind of stock which fits in readily with other animals, consumes produce which would otherwise be wasted, requires little space, and yields a return during life, as well as when killed for the market. The kind of fowl best adapted to the purposes of those who wish to supply the markets is a much disputed question; but without losing a season in lengthened deliberation, it is easy temporarily to fix on the kind which *appears* best, and, while realising from them, experiments on other kinds may be carried on at small expense and trouble. The Spanish fowl lays an egg more magnificent in size than that of any other kind of fowl; these eggs have been known to weigh as much as four ounces, while those which usually supply our markets are from two to two and a half. It may be worthy the consideration of those who collect eggs for the market, whether eggs sell better for exceeding the usual size, and worthy the consideration of the housekeeper whether such eggs are better for domestic purposes. It has been affirmed by one of our best judges, that there is so much less richness in the Spanish fowl's egg than in that of the Cochin-China, that two eggs of the last would make as good a custard as three of the first. There is great difference of opinion about the laying properties of the Spanish fowls; some persons find them excellent layers, while many complain that, although their eggs are very large, the number which they lay is very small. The Spanish fowl's egg is thick in form, and the shell is white. The Dorking also lays a fine large egg; but her character as a layer varies greatly in different localities; these fowls, like the Spanish, are sometimes complained of as indifferent layers, and sometimes praised for being very good in that particular. The eggs are white and good in flavour. The Cochin-China fowls lay a great number of eggs, and have one good quality which would tell well in the hands of persons anxious to have a regular supply for the markets; they do not, like most kind of fowls, leave us without eggs for months together during the winter, but the supply from them is almost as good then as at other seasons of the year; winter is a time when eggs will always realise a good price. The Cochin-China eggs are of medium size, being larger than those of the game fowl, and smaller than the Spanish, about as large as those which usually supply the markets. Those Cochin-China hens which may be considered the best layers will resort to the nest and deposit an egg daily, with uninterrupted regularity for many weeks together. These *best layers* are distinguished from those which are subject to the freak of nature of laying two eggs in one day, for which unusual activity the owners often have no reason to be grateful. There are few persons who keep Cochin-China fowls who do not meet with instances of this unnatural fecundity, but it is generally at the expense either of regularity in the supply—of a perfected eggshell—or of fertility in the egg. Soft eggs are often dropped without interrupting the daily laying. The Cochin-China eggs are particularly delicate and fine in flavour. The shell is more deeply tinted than that of any other kind of fowl, being variously tinged with shades of buff and chocolate, and sometimes tettered over with chalky-looking specks, which give it a peculiarly delicate, pearl-like appearance. The chocolate tint is more admired than the yellow. As this colouring in the eggshell is peculiar to the breed, a depth of shade is valued by connoisseurs; but it is not imperative, for perfectly true bred fowls, imported fowls as well as those which have been bred here, will sometimes lay eggs not very much more coloured than those of the game fowl, and even the same hen will lay eggs of different shades. In beauty of form and plumage there are few fowls which excel the game fowl; their quarrelsome disposition, however (although exaggerated by some authors), exists in a sufficient degree to render keeping a number together troublesome and even dangerous to themselves. In producing fowls for the table these would be less profitable than larger sorts, as giving less weight of meat, but the chickens are very delicious in flavour, as are also the eggs. The egg is rather small, with a tinted shell. The families which now go under the name of Hamburghs are considered good layers. These are the fowls among which the decision of the farmer is most likely to hesitate; but whatever breed may be fixed on let it be *kept pure*, and with cleanliness and *abundant feeding*, perhaps there is no kind which would not make an ample return. Although, perhaps, no fowls match the Cochin-China in the number of eggs which they lay, most are pretty good layers if well cared for, and abundantly fed. Where food has to be purchased, and a large supply of eggs is desired, it is the best economy to buy the best corn and meal, and to give the fowls as much as they can eat. When the owner possesses refuse corn for which he can find no ready market, the case is different, and a little waste does not matter, as it would do if the food were paid for.

THE TOMATO.

To many persons there is something unpleasant, not to say disgusting, in the flavour of this excellent fruit. It has, however, long been used for culinary purposes in various countries of Europe. Dr. Bennett, a professor of some celebrity, considers it an invaluable article of diet, and ascribes to it very important medicinal properties. He declares:—1. That the tomato is one of the most powerful deobstruents of the *Materia Medica;* and that, in all those affections of the liver and other organs where calomel is indicated, it is probably the most effective and least harmful remedial agent known in the profession. 2. That a chemical extract will be obtained from it, which will altogether supersede the use of calomel in the cure of diseases. 3. That he has successfully treated diarrhœa with this article alone. 4. That when used as an article of diet, it is almost a sovereign remedy for dyspepsia and indigestion. 5. That persons in ordinary should make use of it, either raw, cooked, or in the form of a catsup, with their daily food, as it is the most healthy article in the *materia alimentaria.* Professor Rafinesque, of France, says:—"It is everywhere deemed a very healing vegetable, and invaluable article of food." Dungleson says:—"It may be looked upon as one of the most wholesome and valuable esculents that belong to the vegetable kingdom." Professor Dickens asserts that it may be considered more wholesome than any other acrid sauce. A writer in the *Farmer's Register* says:—"It has been tried by several persons with decided success. They were afflicted with a chronic cough, the primary cause of which, in one case, was supposed to be diseased liver—in another, diseased lungs. It mitigates, and sometimes effectually checks, a fit of coughing. The method most commonly adopted in preparing this fruit for daily use, is to cut them in slices, and serve with salt, pepper, and vinegar, as you do cucumbers. To stew them: remove them ripe from the vines, slice up, and put them in a pot over the stove or fire without water. Stew them slowly, and when done, put in a small piece of good butter, and eat them as you do apple-sauce. Some add a little flour, and bread finely crumbled."

REMARKS ON POULTRY.

FEEDING.—This subject is not generally so well attended to as it deserves; it is true, where fowls have a good run they can provide themselves with many a dainty morsel, and will do well with one good feed of corn per day; but it is not always that persons keeping fowls can accommodate them thus extensively, and it is therefore necessary to provide what they require by artificial means. Most fanciers are aware that fowls require other things besides sound corn for their welfare,—such as green and animal food, calcareous matter and grit; and I consider it absolutely necessary for them to be supplied with these, more particularly while laying and moulting. The green food may consist of grass, lettuces, chicory, cabbage, &c. The animal food is naturally—snails, beetles, grubs, worms, maggots, &c.; and, when a supply of these fail, then butchers' offal, tallow-chandlers' greaves, or any refuse meat, will be found very advantageous. In winter, an allowance of fat will be found beneficial, as, by the internal combustion of the carbon, of which fat is principally composed, the animal heat will be sustained, and, consequently, laying will be promoted. Calcareous matter enters largely into the formation of bones and egg-shells. Chalk, in small pieces, is recommended; but I do not find the fowls very fond of eating it; naturally they eat the shells of snails, and other small land shells, which, with the hard coverings of beetles and other insects, contribute largely to the production of egg-shells. Egg-shells, thrown from the house, are greedily eaten. The best substitute I have found to consist of bone powder, a small quantity of which may be given daily in their food; and this I have found to cure some of my high-bred hens of laying soft eggs, when a regular cramming with chalk did not succeed. Hempseed, linseed, and sunflower-seed, are very nutritious, and conducive of laying. For rearing young chickens. I have found milk-curds (where easily obtained), mixed with ground oats, to be the best food; where not obtainable, I use ground oats, mixed with water, with a small quantity of bone-powder added; or rice, parboiled and rolled in ground oats or barley-meal, so as to separate the grains. And a piece of bullock's liver, boiled hard and grated, is also an excellent occasional treat for the little chickens. Ducks are famous trenchermen, and require to be filled. I have found stinging-nettles, chopped and moistened with pot-liquor or wash, and mixed with a small quantity of pollard or meal, to be a cheap food, and, with an occasional feed of corn, they thrive well on it.

ACTION AND RE-ACTION IN FARMING.

FENCES operate in two ways,—if good, they are a defence; if poor, an offence.

Many a farmer, by too sparingly seeding his new meadows, has had to *cede* his whole farm.

Every farmer should see daily every animal he has, and inspect its condition. Weekly visits, as with some, soon result in *weakly* animals.

The man who provides well sheltered cotes for his sheep in winter, will soon find plenty of *coats* for his own back.

A good housewife should not be a person of "one idea," but should be equally familiar with flower-garden and flour-barrel; and though her lesson should be to lessen expense, yet the scent of a fine rose should not be less valued than the cash in the till. If her husband is a skilful sower of grain, she is equally skilful as a sewer of garments; he keeps his hoes bright by use, she keeps the hose of the whole family in order.

ON THE CHOICE OF SPECTACLES.

SPECTACLES are usually manufactured of an oval form and small size to render them more elegant; but, as regards their utility, it is infinitely preferable that they should be large and round, covering not only the globe of the eye, but also a part of its vicinity. This is especially necessary for coloured glasses employed to mitigate the impression of light, in the cases of photophobia, and congestion and chronic inflammation of the internal membranes. The border of such glasses should extend to the margin of the orbit; otherwise the light, especially that which is reflected from the ground, will strike upon the circumference of the globe, the centre only being protected by the darkened glass; and the impression thus produced is doubly injurious on account of the contrast.

Something similar is true of lenses when they are oval and too small; refraction takes place only for objects placed in front of the eye, whilst those placed above, below, or laterally, especially during the movements of the organ, present their natural image. A very disagreeable confusion and inequality of vision, and sometimes diplopia, results from this. These effects are more marked when the glasses are bi-convex or bi-concave; for then their diminished curvature at the circumference causes vision to be less clear than in looking through the centre. To obviate this inconvenience, periscopic glasses, that is to say, in the meniscus form, may be advantageously employed, convex-concave for the presbytic (with predominance of convexity) and concave convex for the myopic (with predominance of concavity). As to the glasses of cylindrical surface, I have not yet been able to form a conclusive opinion in regard to them. In general it has appeared to me that they have no appreciable advantages, and that if they are to be used, they should be chosen of a number a little more feeble than other glasses.

The framework of spectacles should be light and of proper dimensions. If it be too large and broad their immobility is lost, and the eyes are fatigued by the vacillation of the image; if it be too narrow and heavy the temples are compressed, pain and a feeling of uneasiness are produced in the parts near the eye, and secondarily in this organ, and the sight is thus affected. The glasses should be neither too near nor too far from each other; if this consideration is not attended to, diplopia and other anomalies of vision may result.

In wearing spectacles they should be carefully placed parallel, and not obliquely to the iris; for the oblique incidence of the rays impairs the clearness of the image. If brought too near the eye they hinder the movements of the lids, or the transparence of the glasses is destroyed by the contact of the cilia, of tears, and of mucus. Equal care should be observed not to remove them too far, and place them more or less low upon the nose, which changes their mode of refraction, and gives them a different power from that which their number indicates. To speak generally, they should be placed as near the eyelids as may be without causing them to come in contact with the cilia. In this respect the conformation of the nose, of the eyes, and the edge of the orbit, may occasion difficulties which should be vanquished by the optician in giving to the frames the particular form which the circumstances require.

Tears, transpiration, the vapour exhaled in the respiration, and that contained in the air, are deposited more or less upon the glasses of spectacles. They should, therefore, be occasionally taken off and carefully wiped with a piece of fine linen, or, what is better, fine wash-leather. When they are laid aside, the surface of the glasses should not be brought in contact with the objects on which they are placed, for, especially if convex, they are easily scratched by the contact of dust, foreign substances, and the inequalities of the surfaces with which they are brought in contact. They should be placed open, on their border, or folded with the branches placed underneath to protect the glasses. The purity of the material of the glasses and the polish of their surfaces are essential.

When spectacles are necessary the following rules will determine whether you really require the aid of glasses. When we are obliged to remove small objects to a considerable distance from the eye in order to see them distinctly. If we find it necessary to get more light than formerly, as, for instance, to place the candle between the eye and the object. If, on looking at, and attentively considering a near object, it fatigues the eye and becomes confused, or if it appears to have a kind of dimness or mist before it. When small printed letters are seen to run into each other, and hence by looking stedfastly on them, appear double or treble. If the eyes are so fatigued by a little exercise, that we are obliged to shut them from time to time, so as to relieve them by looking at different objects. When all these circumstances concur, or any of them separately takes place, it will be necessary to seek assistance from glasses, which will ease the eyes, and in some degree check their tendency to become worse; whereas, if they be not assisted in time, the weakness will be considerably increased, and the eyes be impaired by the efforts they are compelled to exert.

MINUTENESS OF OBJECTS.

WHILE pondering on the "world's around world's stupendous rolling," among which our globe, vast as it is, seems but an atom, we are astounded by the immensity of the universe. No less astonished must we be when, turning from the consideration of the mighty whole, we contemplate the minute subdivisions of the material world. Though it is *not* true that matter may be *infinitely* subdivided, in the strict and extended sense of the word, yet it is demonstrable that it can be subdivided beyond any fractional part which can be indicated by figures. In other words, although Nature has her limits, they extend farther in minuteness, as well as in vastness, than our powers of conception can enable us to apprehend. Without going farther than the case of animalcula, as exhibited by the magnifying powers of the microscope, we can ascertain that animalcula themselves, so small as to be impalpable to the naked eye, are preyed upon by others as much smaller than they, as they are to the vegetable or animal productions on which they exist. A single grain of blue vitriol will give a fine blue tinge to six gallons of water; and to a similar quantity less than a grain of cochineal will communicate a fine bright purple. A single grain of musk will, for many years, give a very perceptible odour to a room in which it is placed. Yet the air which it each instant perfumes is at every instant making way for the unperfumed air of the external atmosphere.

STATISTICS OF MUSCULAR POWER.

MAN has the power of imitating almost every motion but that of flight. To effect these he has, in maturity and health, 60 bones in his head, 60 in his thighs and legs, 62 in his arms and hands, and 67 in his trunk. He has also 434 muscles. His heart makes 64 pulsations in a minute, and therefore 3,840 in an hour, and 92,160 in a day. There are also three complete circulations of his blood in the short space of an hour. In respect to the comparative speed of animated beings, and of impelled bodies, it may be remarked that size and construction seem to have little influence, nor as comparative strength, though one body giving any quantity of motion to another is said to lose so much of its own. The sloth is by no means a small animal, and yet it can travel only fifty paces in a day; a worm crawls only five inches in 50 seconds; but a lady-bird can fly twenty million times it own length in less than an hour. An Elk can run a mile and a half in 7 minutes; an antelope, a mile in a minute; the wild mule of Tartary has a speed even greater than that; an eagle can fly 18 leagues in an hour; and a canary falcon can even reach 250 leagues in the short space of 16 hours. A violent wind travels 60 miles an hour; sound 1,142 English feet in a second.

VEGETABLE GARDEN CLOCKS AND BAROMETERS.

FORTUNATELY, at the present day, clocks and watches are so plentiful that but very few persons would like to regulate their time by the flowers of the field. It is, however, interesting to notice the various influences and effects of the weather in relation to plants as well as animals, and there can be no doubt whatever that much may be learned by studying their action:—As there are but ten of the equinoctial plants which *open* at stated hours, the two first on the following list are taken from those which *shut* at a given hour:

O'clock.	*English Names.*	*Scientific Names.*
1.	Proliferous pink ...	Dianthus prolifer.
2.	Marsh sow thistle...	Sonchus palustris.
3.	Yellow goat's-beard	Trogapogon pratense.
4.	Yellow devil's-bit...	Leontodon autumnale
5.	Common sow-thistle	Sonchus oleraceus.
6.	Spotted hawkweed	Hypochœris maculata
	Narrow leafed do.	Hieracium umbellatum
7.	Broad-leafed do. ...	Hieracium sabaudum.
8.	Narrow-leafed do...	Hieracium auricula.
9.	Smooth-leafed do.	Hypochœris glabra.
	Caroline Mallow .	Malva Caroliniana.
10.	Garden lettuce......	Lactuca sativa.
11.	Alpine bastard hawkweed	Crepis Alpina.
12.	Blue-flowered Alpine	Sonchus Alpinus.

To this curious time-piece a couple of vegetable barometers may be added, which act upon similar principles, and are, likewise, sufficiently accurate for the gardener and farmer. The first barometer is the African marigold, or Calendula pluvialis. If the African marigold does not open its flowers in the morning about seven o'clock you are sure to have rain that day, except it is to be accompanied with thunder. The second barometer is the Siberian sow-thistle, or Sonchus Sibericus. If the flowers of the Siberian thistle keep open all night, you are sure of rain next day.

Mulled Wine.—Add to one quart of wine one pint of water and one tablespoonful of allspice; boil them together a few minutes; beat up six eggs with sugar to your taste; pour the boiling wine on the eggs, stirring it all the time. Be careful not to pour the eggs into the wine, or they will curdle.

MULLED WINE (IN VERSE).

First, my dear madam, you must take
Nine eggs, which carefully you'll break;
Into a bowl you'll drop the white,
The yolks into another by it.
Like Betsy, beat the whites with switch
Till they appear quite froth'd and rich—
Another hand the yolks must beat
With sugar, which will make them sweet;
Three or four spoonfuls maybe 'll do,
Though some, perhaps, would take but two
Into a skillet next you'll pour
A bottle of good wine, or more;
Put half a pint of water, too,
Or it may prove too strong for you:
And while the eggs by two are beating,
The wine and water may be heating;
But when it comes to boiling heat,
The yolks and whites together beat
With half a pint of water more,
Mixing them well, then gently pour
Into the skillet with the wine,
And stir it briskly all the time.
Then pour it off into a pitcher,
Grate nutmeg in to make it richer.
Then drink it hot,—for he 's a fool
Who lets such precious liquid cool.

Six Reasons for Planting an Orchard.—1. Would you leave an inheritance to your children? Plant an orchard. No other investment of money and labour will, in the long run, pay so well. 2. Would you make home pleasant—the abode of the social virtues? Plant an orchard. Nothing better promotes, among neighbours, a feeling of kindness and good-will than a treat of good fruit, often repeated. 3. Would you remove from your children the strongest temptations to steal? Plant an orchard. If children cannot obtain fruit at home, they are very apt to steal it; and when they have learned to steal fruit, they are in a fair way to learn to steal horses. 4. Would you cultivate a constant feeling of thankfulness towards the great giver of all good? Plant an orchard. By having constantly before you one of the greatest blessings given to man, you must be hardened indeed if you are not influenced by a spirit of humility and thankfulness. 5. Would you have your children love their home, respect their parents while living, and venerate their memory when dead—in all their wanderings look back upon the home of their youth as a sacred spot—an oasis in the great wilderness of the world? Then plant an orchard. 6. In short, if you wish to avail yourself of the blessings of a bountiful Providence, which are within your reach, you must plant an orchard. And when you do it, see that you plant good fruit. The best are the cheapest.

Preparation of Liquid Glue.—All chemists are aware that when a solution of glue (gelatine) is heated and cooled several times in contact with the air, it loses the property of forming a jelly. M. Gmelin observed, that a solution of isinglass, enclosed in a sealed glass tube and kept in a state of ebullition on the water-bath for several days, presented the same phenomenon, that is to say, the glue remained fluid and did not form a jelly. The change thus produced is one of the problems most difficult of solution in organic chemistry. It may be supposed, however, that, in the alteration which the glue undergoes, the oxygen of the air or of the water plays a principal part; what leads me to think this is the effect produced upon glue by a small quantity of nitric acid. It is well known that by treating gelatine with an excess of this acid it is converted by heat into malic and oxalic acids, fatty matter, tannin, &c. But it is not thus when this glue is treated with its weight of water and with a small quantity of nitric acid; by this means a glue is obtained which preserves nearly all its primitive qualities, but which has no longer the power of forming a jelly. Upon this process, which I communicated, is founded the Parisian manufacture of the glue which is sold in France under the title of "*Colle Liquide et Inaltérable.*" This glue being very convenient for cabinet-makers, joiners, pasteboard workers, toy-makers, and others, as it is applied cold, I think it my duty, in order to increase its manufacture, to publish the process. It consists in taking one kilogramme of glue, and dissolving it in one litre of water, in a glazed pot over a gentle fire, or, what is better, in the water-bath, stirring it from time to time. When all the glue is melted, 200 grm. of nitric acid (spec. grav. 1·32) are to be poured in, in small quantities at a time. This addition produces an effervescence, owing to the disengagement of hyponitrous acid. When all the acid is added, the vessel is to be taken from the fire, and left to cool. I have kept the glue, thus prepared, in an open vessel during more than two years, without its undergoing any change. It is very convenient in chemical operations; I use it with advantage in my laboratory for the preservation of various gases, by covering strips of linen with it.—*Comptes Rendus* (1852), *Chemical Gazette.*

Fattening of Pigs.—By direct experiment, it has been ascertained that pigs fatten much better on cooked than on raw food. This being the case, it is only waste of time and materials, as also loss of flesh, to attempt to fatten pigs on raw food of whatever kind; for although some sorts of food fatten better than others in the same state, yet the same sort, when cooked, fattens much faster and better than in a raw state. The question, therefore, simply is, what is the best sort of food to cook for the purpose of fattening pigs? Roots and grain of all kinds, when cooked, will fatten pigs. Potatoes, turnips, carrots, parsnips, mangold-wurtzel, as roots; and barley, oats, pease, beans, rice, Indian-corn, as grain, will all fatten them when prepared. Which, then, of all these ingredients should be selected as the most nourishing, and, at the same time, most economical? Carrots and parsnips, amongst roots, are not easily attainable in this country, and therefore cannot be regarded as economical food, and as to the other sorts of roots, when cooked, potatoes doubtless contain more nourishment than turnips, even in proportion to their former prices; for it was easy to obtain 10s. for a ton of Swedish turnips, as 8s. for a boll of forty stones of potatoes; and yet potatoes contained solid matter in the proportion of twenty-five to ten-and-a half as regards turnips. It is now, however, questionable whether potatoes can be depended on as a crop at such a price as to fatten pigs on economically. But mangold-wurtzel presents properties for supporting animals which are worthy of attention. It contains fifteen per cent. of solid matter, potatoes having twenty-five per cent.; but it contains a larger proportion of the protein compounds—those ingredients which supply the materials of muscle—than potatoes. Thus they contain respectively, when dried at 212° Fahr.:—

	Protein compound.	Other nutritive matter.
The dried potato.........	8 per cent.	82
" yellow turnip	9¼ "	80
" man.-wurts.	15½ "	75

So that the proportion of the protein compounds in the mangold-wurtzel is nearly twice as great as in the potato.

Life of Vegetables.—It has been assumed that the principle of life in vegetables is of the same nature as that in animals. Dr. Marcet tested this curious theory by means of chloroform. He found that if a drop or two of pure chloroform be placed on the point of the common petiole of a leaf of the sensitive plant, the petiole is soon seen to droop, and directly afterwards the leaflets collapse in succession, pair by pair, beginning with those that are situate at the extremity of each branch. A minute or two afterwards, most of the leaves near that on which the chloroform is placed, and situate below it on the same stem, droop one after the other, and their leaflets collapse, although not in so decided a manner as those of the leaf to which the chloroform is applied.

How to Ruin a Son.—1. Let him have his own way. 2. Allow him free use of money. 3. Suffer him to roam where he pleases on the Sabbath. 4. Give him full access to wicked companions. 5. Call him to no account for his evenings. 6. Furnish him with no stated employment. Pursue any of those ways, and you will experience a most marvellous deliverance, or will have to mourn over a debased and ruined child. Thousands have realised the sad result, and have gone sorrowing to the grave.

Hatching Nests.—These I prefer on the ground, and formed of damp turf, lined with dry heath and linchen or liver-wort, collected from trees, &c. The nest should be made so large that the hen can just fill it, not very deep, and as nearly flat inside at the bottom as possible, so that the eggs may not lean against each other, or they are very liable to be broken, especially by the hens turning them. A little Scotch snuff is also a good thing to keep the nest free from vermin. Why I recommend ground nests, and rather damp, is, that it is admitted that the hen that steals a nest in a hedge or coppice generally hatches all her eggs, and brings home strong chickens; whereas, the one that sits at home, in a dry box or basket, often spoils many of her eggs, and her chickens are frequently weakly, which I attribute to the great evaporation that takes place from the egg during incubation in such unnaturally dry nests, which also renders the chicken feverish and weakly. In support of which opinion, I can say, I have hatched my best broods in nests thus made and well moistened; and frequently have not had one egg in a sitting miss.

Breeding.—Never breed from relations; always select strong, healthy birds of the same variety; do not think by mixing the sorts to improve a breed; a cross may do well enough to eat, but if a breed is crossed it is not to be depended on afterwards, as they will often run back for many generations. The formation of a new variety will take a very long time, and then mostly ends in disappointment. Keep each breed pure, and improve it by saving the best specimens, and add good fresh blood of, as near as possible, the same. I think the eggs of a hen may be depended on during three weeks after her removal from any male, and without being put to another. Thus I found the eggs of a hen that had been removed from a game cock took after him till the tenth day of separation; and that the eggs of another, that had not been with a rooster, produced chickens as early as the fourth day after being put to one. The hens in both cases were laying.—B. P. Brent, Bessel's Green, Sevenoaks.—*From the Cottage Gardener.*

Early Rising.—I would have inscribed on the curtains of your bed, and the walls of your chamber, "If you do not rise early, you can make progress in nothing. If you do not set apart your hours of reading; if you suffer yourself or any one else to break in upon them, your days will slip through your hands unprofitable and frivolous, and unenjoyed by yourself.—*Lord Chatham.*

A Hint to Oyster-eaters. —When too many oysters have been incautiously eaten, and are felt lying cold and heavy on the stomach, we have an infallible and immediate remedy in hot milk, of which half a pint may be drunk, and it will quickly dissolve the oysters into a bland, creamy jelly. Weak and consumptive persons should always take this after their meal of oysters.—*Dr. Evans.*

Use the Minutes.—Is it asked, says Channing, how can the labouring man find time for self-culture? I answer that an earnest purpose finds time, or makes time. It seizes on spare moments, and turns fragments to golden account. A man who follows his calling with industry and spirit, and uses his earnings economically, will always have some portion of the day at command. And it is astonishing how fruitful of improvement a short season becomes, when eagerly seized and faithfully used. It has often been observed that those who have the most time at their disposal profit by it the least. A single hour in the day, steadily given to the study of some interesting subject, brings unexpected accumulations of knowledge.

TELEGRAPHY AND THE ATLANTIC TELEGRAPH.

(*Continued from page* 39).

In May, 1864, a contract was made by the Atlantic Telegraph Company with the above firm for the manufacture and submersion of a new cable, for which they were to receive £700,000; and in case of the success of the undertaking, a further sum of £137,140, in the old guaranteed shares of the Atlantic Telegraph Company. The construction of the cable of 1864 differed very materially from that of 1858, showing the great improvement that had been made in those few years in everything connected with telegraphy. The CONDUCTOR was nearly three times the size of the old, and consisted of *seven* wires instead of one: the whole strand weighed 300 lbs. per nautical mile; the centre wire being embedded in a coating of Chatterton's compound. The INSULATION consisted of *four* layers of gutta-percha, laid alternately with *four* layers of Chatterton's compound, making the diameter of the strand rather less than half an inch; the copper wires and these several layers of insulating material forming what is called the *core* of the cable. The EXTERNAL PROTECTION was composed of *ten* solid wires of homogeneous iron, each separate wire having a surrounding of *five strands* of manilla yarn: the object of using these numerous coverings of yarn being first to protect the wires, and secondly to reduce the specific gravity of the cable. The protective wires having been laid spirally over the core, the whole was finally padded with common hemp, and saturated in a preservative mixture. The WEIGHT of the entire cable in *air* was 35 cwt. 3 qrs. per nautical mile, and in *water* 14 cwt. Its LENGTH before being laid was 2,300 miles, the distance from Newfoundland to Ireland being 1,668 nautical miles. The SHORE ENDS were wrapped in yarn to a thickness of two inches, while twelve strands of galvanized iron wire, each a quarter of an inch thick, encircled the whole; making the diameter of the shore ends 2½ inches, and the *weight* 20 tons per nautical mile The Valentia end was 27 miles, and the Newfoundland end 3 miles long. The total length of *copper wire* used in the cable was 25,000 miles, of the *iron wire* 35,000, and of *hempen strand* 400,000—a length sufficient to encircle the earth *sixteen* times.

During the manufacture of the cable—which was completed at the rate of ten miles a day—and at its subsequent laying, the beautiful invention of Messrs. Thompson and Varley for detecting the precise locality of a flaw was found of the utmost advantage.

The *Great Eastern* — having been chartered, for £50,000, to lay the cable —commenced on the 11th of July, 1864, to fit up the three immense tanks, of 59 feet diameter and 20 feet deep, for the reception of the cable. The *Great Eastern*, after having taken on board the whole of the cable, at the rate of 22 miles a day, and fitted up all her new and elaborate paying-out and recovering apparatus, started from her moorings on the 15th of July, 1865, reached Valentia on the 19th, laid the shore end on the 22nd, effected the splice with the main line on the 23rd, and —preceded by the war-steamer *Terrible* to pilot the way, and accompanied by the *Sphinx* as a tender—started on her great mission. The misfortunes that attended this expedition, almost from starting, were doubly annoying, considering the skill and unwearied care expended on every part of the machinery, and the attention bestowed on the cable and the paying out. Treachery had evidently much to do with the frequent interruptions, if not in the final failure of the expedition. Nails had been discovered driven into the core of the cable, necessitating the picking up of several miles, and the formation of new splices. At last, when nearly half the distance had been completed, the cable parted, and the severed end disappeared in the ocean. After losing all their grapnels in the attempt to recover the lost cable, a buoy was moored to mark the spot where it lay, and the *Great Eastern* and her consorts returned to England. In these failures and partial successes £1,900,000 had been expended.

Should anything occur to throw the Atlantic Telegraph (now so successfully laid) out of working order, and compel the construction of another cable, a new route would be adopted, and the line, called by its promoters the "North Atlantic Telegraphic route," would be adopted as the course of all future telegraphic communication between England and America. Indeed, as under the most fortunate circumstances, it is totally impossible that one line of communication, or one company, can long supply the growing commercial and social requirements of Europe and America; and as another, and probably several telegraphic lines, will in a few years be established between the two hemispheres; and as the first of these will be undoubtedly the Great North Atlantic route, a few facts connected with the proposed undertaking cannot fail to prove acceptable to the public, on a subject so fraught with the social advancement of the age. One of the chief objections raised by the supporters of the present line, and by several scientific men of high distinction, is the great sea-length of the present cable—a length exceeding at one stretch 1,600 miles, exposed to all the accidents and friction of submarine rocks and mountains, at a depth, in many places, of from four to five miles. At the same time it is asserted that the conveying power and facility of despatch is proved to be *greater* when the submerged portion of the cable is confined to a reasonable length, or the continuity is broken by occasional passages overland. To obtain the advantages resulting from short deep-sea lines, the Great North Atlantic Telegraph Company propose to divide their cable into four land, and four or five deep-sea lengths, no portion exceeding 750 miles. Another, and by no means inconsiderable advantage proposed by this company, is that of making the chief terminus in London; instead of, as now, having to transmit all messages in the first instance to Ireland. The programme of the intended route is to lay down a line right through the length of Great Britain, from the capital to the extreme northern point of Scotland; from thence a short sea line would unite the mainland with either the Orkneys or Shetlands, from whence another sea cable of 250 miles would unite Great Britain with the Faröe Isles. The distance from the Faröes to Iceland is merely 240 miles, while from Iceland to the southern point of Greenland, the longest stretch of water in the whole route, is only 743 miles, considerably less than *half* of the length of the present Atlantic Telegraph between Newfoundland and Ireland. From

Greenland to Labrador is 507 miles, from Labrador to Canada, overland, is 210 miles; and here it would join the great Canadian line, and be in direct communication with all the British American possessions, and all the ramifications of the United States system of telegraphic wires. One of the advantages of this line is that it will admit of the laying down of *two* cables at the same time, one line to be kept exclusively for outward, and the other for homeward, messages; thus greatly facilitating the transmission of all information. The delays in extreme cases of magnetic storms would be greatly reduced, and the permanence of electric communication assured. It is calculated that through the longest portion of the sea cable, that from Iceland to Greenland, 743 miles, messages may be transmitted at the rate of fifteen words a minute; while through the shorter sections of the cable, words may be flashed at the rate of *twenty* or *thirty* a minute. The highest ratio obtained by the Atlantic Telegraph Company's wire in 1858, through an entire length of 2,500 miles, was only 2¼ words a minute.

Though the line will be divided into so many sections, it will not be necessary to retransmit the through messages at each point of junction, but merely to place at each land station mechanical transmitters—repeating instruments—with relays of auxiliary battery power; by this means England may then communicate with America without a break of line, in the same manner that London now converses with Constantinople, St. Petersburg, and Vienna. The comparatively small risk in the submersion of the cable, and the short time required for the operation, not exceeding a few days, with the small amount of labour and expense involved in this portion of the work, are advantages, compared with a long sea line, which in a mercantile sense must have a very great influence on the shareholders. It has been satisfactorily proved in the United States, by the contrast between the Southern and the Northern States, that the electric telegraph works much *better* in cold than in warm latitudes; hence the northern route is considered to be highly advantageous, as far as the electric power of the telegraph is concerned. The only objection that has been advanced against the proposed northern line was the fear of icebergs and floes or drifts of ice, striking the shore, grounding, or otherwise injuring the shore end of the cable. This is, as it appears from the testimony of the inhabitants, a needless apprehension

The maximum depth of the sea between Scotland and the Faroe Islands is 254 fathoms; between the Faroes and Iceland, 682 fathoms; and from there to Greenland, 1,550 fathoms; while from Greenland to Labrador the depth is 2,032 fathoms.

Having given a full account of all the unsuccessful attempts which had been made to lay the Atlantic telegraph, we will now narrate the history of the last expedition, which has been crowned with the happiest results, and when the difficulty so long encountered was triumphantly overcome.

On Thursday, the 12th of July, 1866, the *Great Eastern*, laden with that magnetic chain that was to unite the two hemispheres, and in the success of which the civilization of the whole world was more or less interested, left Bantry Bay, on her great mission, and on Friday, the 13th, reached Valentia, and at 11.30 a.m. took on board her extremity of the shore end of the cable; the opposite end having been safely landed on the previous Saturday, July 7th. At 2.30 p.m. the splice with the deep-sea cable was made on board the *Great Eastern*, and the insulation being perfect throughout the whole length of cable, at 3.20 the firing of two guns and the running up of the ensign and Union Jack, with the stripes and stars, and a ringing cheer from the crew, proclaimed the fact that the monster ship was under weigh, and the Atlantic Telegraph paying out splendidly over her stern. The *Terrible*, *Albany*, and *Medway*, the consort squadron, took up their allotted stations ahead and on either side, and the whole majestically stood out to sea

The arrangements on board the *Great Eastern*, as respects stowage of cable, paying out, and picking-up gear, were all so like those on the last occasion, only still more improved, that it is quite unnecessary to recapitulate them. By noon of Saturday the distance run was 135·5 miles, and the amount of cable paid out 144·58 miles. At 10.45 p.m., on Sunday, Mr. Willoughby Smith signalled to the convoy the following telegram, containing the latest news from Europe:—

"The *Great Eastern* Telegraph.

"Saturday evening, 10.45 p.m., July 14, 1866. Vol. I., No. 1.

"'General Cialdini is moving upon Rovigo with an army of more than 100,000 men and 200 guns. The Austrians have evacuated the whole country between the Mincio and the Adige.'

'Seems it not a feat sublime,
Intellect hath conquered time.'"

During the rest of the voyage the latest telegrams were daily signalled to the other ships. In this manner everything worked admirably, and the electrical condition of the cable continuing in splendid order, the *Great Eastern* kept on her steady course at an average speed of five knots, and a strain on the dynamometer of 10·54.

All went well, and not a circumstance had occurred to mar the satisfaction of those so deeply interested in the success of the expedition, till 12.20 on the 18th of July, when the first real shock was given, and for a short time well-grounded apprehension was caused to all on board. A foul flake had taken place in the after tank. The engines were immediately turned astern, and the paying-out stopped; part of the paying-out cable had caught three turns of the flake immediately under it, carrying them into the eye of the coil, fouling the lay-out, and seriously entangling a large portion of the cable. Fortunately, the accident was detected before reaching the paying-out machinery; so serious, however, appeared the mischief, that the buoy was ordered to be got in readiness; no fishing line, states the report, ever seemed more hopelessly entangled than this portion of the Atlantic Telegraph; all this, too, occurred during a heavy fall of rain, a dark night, and a rising sea. By five minutes after two, however, the cable was once again clear and passing safely over the V wheel at the stern of the great ship; the engines were set in motion, and by three o'clock on the morning of the 19th she was again steaming ahead, leaving Valentia 600 miles in her wake. To be prepared to meet any future accident, should such occur, two of the immense buoys were raised by derricks, and placed in position, one on the port and the other on the starboard bow; a precaution that the increasing wind and heavy sea might at any moment prove necessary.

Between six and seven on the morning of the 22nd the *Great Eastern* passed over the deepest part of her course, and by the 25th was involved in thick fogs; at noon that day, in latitude 42° 29′ N., and longitude 48° 10′ 40″ W., had run 1,430 and paid out 1,610·53 miles of cable. The *Albany* was now signalled to steam ahead for Trinity Bay, to find the position of the station ship, and on the next morning was seen returning with H.M.S. *Niger*, which coming close alongside the *Great Eastern*, manned yards and greeted the expedition with three hearty cheers. The presence of an iceberg on the southern horizon, and a dense fog, compelled the frequent firing of guns, and the burning of blue fire, during the whole night; but about eight o'clock on the morning of the 27th, the fog rose suddenly, like a vast curtain, and enabled the *Great Eastern*, led by her consorts, to enter Trinity Bay. At nine the cable was cut, and arrangements made for the *Medway* to lay the shore end; the great ship then steamed into the harbour, where, having successfully completed her task, she became an object of universal admiration and curiosity to the inhabitants. In a few days the shore end was satisfactorily laid, and the line opened to New York and California. As on the former occasion, her Majesty transmitted a congratulatory message to the President of the United States, a compliment immediately responded to by the President, Andrew Johnson. The line continues in the most perfect order, and the *Great Eastern* picking up the cable of 1865 on her return, has furnished us with two telegraphic lines of communication between Great Britain and America.

SURNAMES.

Every man has a name: and every man, if his attention should happen to be turned in that direction, must feel some curiosity to know of what that name is significant, and how it originated. The rude aboriginal inhabitants of this country, our Celtic ancestors, no doubt distinguished each other by single appellations, as they were, in all probability, not sufficiently numerous to require more; some few of these remain, even now, in parts of the country where remains of the Celtic language may still be traced—such as Cairn, signifying a sepulchral hill; Benn, a promontory; Gillies, a servant; Braithwaite, a steep inclosure; Glynn, a valley; Linn, a mountain stream; Callan, a boy; Doity, saucy, nice; Douce, sober, wise; Doylt, stupid; Eldritch, ghastly; Fell, keen, biting; Pen, successful, &c., &c.

The Romans, during their possession of Britain, with the proud feelings of conquerors, held themselves aloof from the inhabitants of the country, and consequently few of their names can be traced amongst us. We now and then meet with one, such as Felix, Marcus, Julius, Carus, Cæsar, and some few others; the last, Cæsar, was, perhaps, given in derision to some one possessed of the opposite qualities to his great namesake.

From the time when the Saxons were invited over and settled in this country, the subject of British surnames becomes curious and interesting. These people, who brought their names, language, habits, and institutions with them, obtained such complete possession of the island, that, from the period of their arrival, all records of the original inhabitants vanish from the page of history. Many of them were, no doubt, extirpated, and others so completely mixed up with the new occupiers of the land, as to become no longer distinguishable as a people. In proof of this, many of our surnames at the present time have a British or Celtic termination affixed to a Saxon name. Some few Danish names may also be traced, particularly along our eastern coasts derived from the marauders of that nation during their occasional settlements in this country. It is astonishing that, after the complete conquest of the kingdom by the Normans in after times, so few purely Norman surnames should be found amongst us; and the universal prevalence of Saxon appellations at the present day proves how essentially the people remained the same under the sway of their foreign masters, and how little they assimilated with them. Indeed, for a considerable period it appears that the names, language, and manners of the Normans spread only among the higher classes of society. Several celebrated linguists have discovered a similarity between the Saxon, Danish, and Norman languages; the last having been, like the two others, originally of a Teutonic race, though assimilated, in later times, to the French, from the proximity of those who spoke it to their Gallic neighbours. "Our present list of English surnames, therefore, is principally Saxon or Teutonic, with some British, partly in a simple and partly in a compounded state, a few French and a few foreign names, imported by occasional settlers." By far the larger class of English surnames at this day is derived from the names of countries, towns, or residences; indeed, the Saxons appear to have deduced most of theirs from this source; as York, Cheshire, Worth, Milton, Ireland, &c. Those of this kind may be distinguished by their various terminations; and a little attention will then demonstrate how very generally they prevail amongst us.

First are those ending in *ton*,—as Norton, the north town; Preston, the sheriff town; Langton, the long town, &c. This is a family of a numerous progeny, and members of it will recur to the recollection of all of us. Those ending in *wich*, meaning a town at the mouth of a river, and sometimes only a town, we must suppose to be of near kin to the above,—as Sandwich, the town on the sand; Hardwich, the strong town; Nantwich, the town of the valley, &c. Then follow those who derive their names from villages, such as Winthorpe, the village of furze; Hillthorpe, the village of the hill; and all our other acquaintance terminating in *thorpe*. Claiming brotherhood with these are those, again, who write *ham*, signifying a hamlet, as the last syllable of their name; such as Pelham, Marsham, Graham, Farnham, with hundreds of others.

Those names ending in *wood*,—as Hazlewood, the wood of hazels; Elmwood, the wood of elms, &c.; and others terminating in *shaw*, meaning a small wood,—as Fernshaw, the shaw of fern, &c.; with those taking *durf*, a thicket, as their last syllable,—as Woodruff, Lendruff, &c., may be considered as forming one family of this class.

All such whose names terminate in *ing*, signifying a swampy bottom, may here claim a place; as Deeping, the deep *ing*; Wilding, the uncultivated *ing*, &c.; also those ending in *den*, *dale*, *don*, or *dell*, a small or deep valley, as Warden, Dovedale, Horndon, &c.

Those ending in *ley*, *lea* or *ly*, a pasture, may next come forward and boast of Saxon origin, as Netherley, the lower field; Hanley, the field of the haven, &c.; as may also such as affix holm to any other syllable, as Burnholm, the hill of the river; Dunholm, the hill of the fortress, &c.

We may enumerate in this class, likewise, all names terminating in *hill*, as Churchill, Farnhill (sometimes written Farnell), &c.; such as end in *stead*, a home,—as Houghstead, Winstead, and others; also such as take for their last syllable *combe*, a valley; *garth*, an enclosed place; *wold*, a stony ridge; *cock*, a hillock; *coates*, a fold; *stow*, a place or seat; *graves*, a ward; *steth*, the bank of a river; *thwaite*, a pasture; *hurst*, a meadow; and many others, which it would be tedious to enumerate. We must be content with having mentioned the principal of them.

The names of our nobility were mostly of this class in ancient times, and were purely Norman French, many of them being derived from districts or towns in Normandy or France, as Beaufort, Montague, Nugent, Russell, or Rouselle, &c. Camden in his "Remains," says that there is scarcely a village in Normandy that has not given its name to some of our great families, which proves how terribly our poor country must have been inundated with foreigners after the Conquest, and how deplorably the inhabitants must have been stripped of their property to enrich the new comers. Some of our nobility at the present day also derive their family names from foreign occupations or trades, as Molyneux, Grosvenor, &c. "Many of them, however, still bear Saxon names, which shows that, after the Conquest, some of the old families retained their dignity, and that some were ennobled."

We will next take those names which are derived from the parent, and which were undoubtedly of very early adoption. Many of these were taken from "contractions, diminutives, or familiar appellatives of Christian names," as taken from regular Christian names, as Johnson, Jacobson, Richardson, Williamson, &c. The Saxon epithet *kin* or *kins*, expressive of littleness or infancy, was also affixed to many Christian names, as Wilkens, little Will; Tomkins, little Tom; and this appellative was transmitted to the next generation as Wilkinson, the son of little Will; Tomkinson, the son of little Tom, &c. In Scotland, Ireland, and Wales, many families have Fitz, O, Mac, and Ap, affixed to their names, to express the same idea; as Fitzwilliam, the son of William; O'Dogherty, the son of Dogherty; Mac Donald, the son of Donald; Ap Rin, contracted into Prin; Ap Howel into Powell, &c. In many parts of England and Wales a distinction has been made between the names of the father and son by simply adding *s*, and sometimes *es*, to that of the former; as Evans, Roberts, Hughes, Williams, &c.

The third class of British surnames may be said to consist of those derived from trades or occupations, and in a country like this, it may be supposed that this tree spreads far and wide; as its branches may be considered all such appellatives as Smith, Baker, Brewer, Taylor. The more useful and common the calling expressed, the more ancient, in all probability, was its appropriation. Thus we may observe that the Fletchers, or makers of arrows; the Websters, the Weavers, the Masons, and some others, though common amongst us, are not of such constant occurrence as those of the more simple trades.

It is a remarkable fact, but a fact nevertheless, that the names of arts or trades introduced in later times have not been adopted as family appellatives; we never hear of Mr. Jeweller, Mr. Engraver, Mr. Architect, &c. "It has also been remarked that though we have Clerk and Leech to designate two of the learned professions, we have none to express lawyer. But the word Clerk was abundantly employed, especially in the north, to express lawyer, as well as priest, and this may account for the extreme frequency of this surname."

We will next consider those names given to their owners originally for some quality or supposed attribute; a feeling of respect seems sometimes to have dictated these, as bestowing a merited distinction; such are those of Bright, Good, Wise, Fair, Hardy, Worthy, and many more. Sometimes derision appears to have pointed her finger at certain individuals by attaching to them such appellations as Cruickshanks, Longbottom, Clodpole, &c. Others seem to indicate a certain disposition of mind or character; as Gotobed (a desirable name to be called by at the close of a dull November day), Younghusband, Wellbeloved, Scattergood, Goodenough, Cleverly, and some other odd compounds, that cause us to smile when they occur in the daily intercourse or life. Writers who have gone deeper into the subject of proper names than most other topics, decidedly think that those of this class are more ancient than any other, as the evident qualities of mind or body would furnish the first distinctive epithets among all early tribes or nations. The vail of mystery hangs over the origin of all things; but certainly a controversy on the antiquity of English proper names would be most amusing, and would, besides, possess the valuable property of lasting out the lives of the controversialists, and of leaving each party crowned with the wreath of conquest, in his own estimation, at the close; for who could decide between them, or say to whom the victory belonged?

The fifth class of surnames is derived from natural objects or productions, chiefly animals, fruit, vegetables, flowers, &c. These were, doubtless, originally conferred from some supposed analogy between the individual and the object which supplied the designation; and if this be admitted, we must suppose that the first possessors of the names of Lion, Panther, Bull, and Bear, would be avoided for their ferocity; while we must confess that, with the original family of the Sharks (now mostly written Stark) we would rather have left a P.P.C. card, than have sent one of invitation. Then what opinion must be formed of the first Lizards, Foxes, Weazles, Badgers, Tadpoles, and Cats? The primitive Lambs, Hares, Coneys, Harts, Partridges, Doves, Goldfinches, Pointers, and Beagles, were, on the contrary, no doubt distinguished for their gentleness and other agreeable or serviceable qualities. All social intercourse with the first Snows and Frosts we must imagine to have been of a most repelling nature; while that with the original Springs, Summerfields, Honeymen, and Goodales, must have been equally agreeable and inviting. The name of Rose, now so common, we can only imagine to have been first bestowed on some fair maiden of surpassing beauty; and our ancestors were surely too gallant to attach such appellations as those of Lily, Hyacinth, Primrose, Hawthorn, or Roseberry, to any other but the fair sex. For the same reason we may conjecture that the first Peaches, Melons, Pines, Gages, and Plumtrees, were females. The names of Hawk, Leopard, and some others, inspire us with no agreeable ideas of their original possessors; while we naturally suppose pertness or insignificance to have marked the first Sparrows, Starlings, Flounders, Whitings, and Smelts.

There are some English surnames that cannot be comprised in either of the above classes. These are mostly monosyllabic, of which it is difficult to trace the etymology, partly from the change which orthography has undergone since the days of early civilisation, and partly from the words having become so obsolete as to elude the efforts of the most industrious research. If they could be successfully investigated, it is generally supposed that they could be referred to one of the five classes enumerated in this paper.

Names derived from dignified titles, such as King, Prince, Duke, Bishop, Earl, &c., have been the subject of some contention. Camden thinks that many names of this kind were taken from the device in the armorial bearings of particular families, and were borne by their servants and dependents; and this seems probable, for it is not likely that dignitaries themselves would be thus called, as they were always distinguished by their proper titles. They might sometimes, however, have been given in derision to individuals who were ostentatious or assuming.

On taking promiscuously a hundred names from a general directory, Mr. Merrick found the proportion of the different classes to be as follows:—

Names of countries, towns, or villages	48
Attributes, qualities, or nicknames	19
Trades or professions	14
Patronymics	9
Natural objects or productions	7
Not comprised in any of the above	3
	100

No trace can be found in this country of the time when the appropriation of surnames ceased, or went out of fashion. Those who have given most attention to the subject, think the practice has not existed, except in a few instances, for the last two or three centuries; and it is the opinion of some that, from the great increase of population, it will be found necessary, ere long, in order to avoid confusion, to revive the custom: to issue a new coinage, and by giving individuals bearing the commonest names the privilege of assuming others on their marriage, to insure to posterity more distinctive appellations than those enjoyed by the families of the present day.

THERE'S NOTHING LOST.

There's nothing lost. The tiniest flower
That grows within the darkest vale,
Though lost to view, has still the power
The rarest perfume to exhale;—
That perfume, borne on zephyr's wings,
May visit some lone sick one's bed,
And like the balm affection brings,
'Twill scatter gladness round her head.

There's nothing lost. The drop of dew
That trembles in the rosebud's breast
Will seek its home of ether blue,
And fall again as pure and blest;
Perchance to revel in the spray,
Or moisten the dry parching sod,
Or mingle in the fountain spray,
Or sparkle in the bow of God.

There's nothing lost. The seed that's cast
By careless hand upon the ground
Will yet take root, and may at last
A green and glorious tree be found;
Beneath its shade, some pilgrim may
Seek shelter from the heat of noon,
While in its boughs the breezes play,
And song-birds sing their sweetest tune.

There's nothing lost. The slightest tone
Or whisper from a loved one's voice
May melt a heart of hardest stone,
And make a saddened heart rejoice;
And then, again, the careless word
Our thoughtless lips too often speak
May touch a heart already stirred,
And cause that troubled heart to break.

There's nothing lost. The faintest strain
Of breathings from some dear one's lute
In memory's dream may come again,
Though every mournful string be mute:
The music of some happier hour—
The harp that swells with love's own words
May thrill the soul with deepest power,
When still the hand that sweeps its cords.

A MAN is taller in the morning than at night to the extent of half an inch, owing to the relaxation of the cartilages—ten days per annum is the average sickness of human life. About the age of thirty-six the lean man generally becomes fatter, and the fat man leaner.

GARDENING FOR OCTOBER.

The Flower Garden.—Now comes the best of all seasons for alterations, making new beds, walks, clumps, and general changes; the removal and planting of trees, shrubs, and plants of all sorts; the making of box edgings, pruning of roses, and all kinds of shrubs, wall-fruit trees, and, though but little attention is paid to it, the standard trees in the orchard. Auriculas grown in pots must now be considered in their winter abode, and be placed on their winter allowance—plenty of air in mild weather, very little water, and no violent cutting winds must blow on them. Chrysanthemums may be removed to the house for blooming, if not already under glass; having stood out all the weather, they will be dwarf, and flower fine. Perennials not parted last month may be divided now. Commence planting out beds of tulips, and finish planting all offsets; prepare also the best bed by putting three inches of cow-dung at the bottom, and returning all the soil to the bed. Biennials may be planted where they are to remain, but the borders should be loosened, and the clumps well forked to clean them, and to get them ready to receive anything that may be planted. Dahlias have done their work for shows, and when their flowers are not wanted, they may be lifted, so as to take no more nourishment from the ground, but must be covered with earth a few days, lest the frost should reach them. Bulbs of every description may be planted in the borders and beds, and be potted for forcing. Pinks, pansies, carnations, picotees, cinerarias, and all other subjects in pots, must be placed in winter quarters, if not done before. Greenhouse plants and cuttings may do awhile in good pits.

Fruit Garden. — Fruit-trees and bushes, raspberry canes, &c., may be moved in general from the end of the present month to the period when they begin to swell their buds; so also may the pruning be commenced. In pruning gooseberries and currants, the side branches should be cut pretty close to form spurs, and the main branches should not be sufficiently numerous to be in each other's way. These bushes do best in strong, rich land, and it should be trenched eighteen inches deep before they are planted.

The Kitchen Garden.—The August sown cabbages should be always planted out for spring use twice as thickly as they are wanted, that when every other one, or two out of every three are drawn for greens during the winter, the others may be left to form cabbages. Plant out lettuces in warm situations, or where they can be protected. Carrots and parsnips, full grown, may be taken up for storing; so also should beet-root, and the rest of the potatoes, if any are still out. Earth celery as it grows up; it is only the covered portion that is eatable. Dig up vacant spaces; let no portion be cleared of crops without laying the ground rough.

PETROLEUM—THE OIL SPRINGS OF CANADA.

(Continued from page 160.)

The Canada native oil, like the American rock oil, is no new discovery. In 1842 it was first spoken of among the settlers. In 1847 it was first mentioned by Sir William Logan, in the Government Geological Survey of Canada West. In 18[illegible] a Mr. Williams happened to be digging a pit in the clay on his farm, when he observed some globules of oil bubbling out on the surface of the soil, and was induced to dig down deeper, until the oil oozed out upon him, and filled the hole. The oil veins are exceedingly capricious. The distance of the rock from the surface may be predicated with some certainty, if experience be taken as a guide, but there is no certainty as to the depth at which the oil may be found. It may burst through the gravel before the rock is reached, or it may delay its appearance until the persevering well-sinker has penetrated to a depth of 250 feet. In Pennsylvania some of the best oil wells, which produce the finest quantity and the largest supply, are 500 feet below the surface. When the vein is first struck in a surface well, the lumps of blue clay are brought up to the top soaked in the blood-coloured fluid. Then the oil-digger is in all his glory; he turns his quid in his mouth, gives his hands another shove down his breeches pockets, and with a face bright with smiles, oil, and perspiration, ejaculates, "Beautiful, ain't it?" Now unless you have some near prospect of getting a share of the profits, it is *not* beautiful, neither in smell nor in looks, but quite the contrary; it will not do to say so, however. Beautiful! is it not worth six cents (2½d.) a gallon, with every prospect of its being worth as much again this time next year? what should make it beautiful if that will not?

According to the same authority, everything oily about the territory is *beautiful*; the nasty black creek, aptly named—as it winds its way slowly along its narrow channel, between banks covered with derricks and vats and well-charred stumps, piles of barrels filled with the unctuous liquid, moulds of sand and clay—is beautiful in his eyes, because it smells of petroleum—to his nose. "Oil Springs" looks like a small edition of South Staffordshire, quite as dirty, and smelling a great deal worse. But there is this in its favour, a forty-eight or ninety-six hours' acquaintance with its odours, and the olfactory nerves become insensible to them; from all points of the compass the creaking of the treadle by which the drill is worked (exactly as described by Father Imbert as being done by the Chinese at their fire wells and salt wells) can be heard throughout the night. Every day brings its quota of wayworn, muddy travellers, who, with bundles on their backs, have stumbled through the dirt, climbed the stumps, and waded through the ditches on the Wyoming and Florence roads. Many of them come to get employment, and they are sure of it; others have come with dollars in their pockets, and in a few days they have added others to the large number of wells already sunk.

There is a story told in the *Toronto Globe* of February 5th, 1862, which, as the well is alluded to in Sir W. Logan's official report, in the descriptive catalogue of the economic minerals of Canada, may, we think, serve as a useful illustration of the subject: premising, however, that John Shaw's well is not shut up, as might be inferred from the official report, but simply "corked up," with a bag of seeds in the pipe, to stop the oil flowing away. John Shaw, choosing not to let his good fortune run to waste, but rather to abide the time coming when the capitalists of England shall unite in a company, to send out ships and bring away across the sea the crude oil he can run out in almost any quantity, to be refined by them, and converted by English skill into products of value. The story is as follows:—"One of the elements of romance at all times has been the sudden elevation of individuals from poverty to wealth. Having settled to our own satisfaction that romance is not dead, we plunge *in medias res*, that is to say, into a certain deep well near Victoria, on Lot 18 in the second concession of the township of Enniskillen. In that well a certain John Shaw centred all his hopes and expectations for many long months. Painfully did he dig, painfully drill, painfully pump, expending first cash, and then credit, and afterwards his own muscles on a wearisome task. Not a sign of oil did he find; his neighbours' wells were overflowing; he alone had received no share of the petrolean stream. The middle of last January found him a ruined, hopeless man; jeered at by his neighbours, his pockets empty, his clothes in tatters. Report says that on a certain day in January he found himself totally unable to pursue his work; his boots had utterly given out, and to enable him to paddle about in the wet and cold a new pair were absolutely necessary. In fear and trembling, as we may suppose, John Shaw proceeded to the neighbouring store, and, having no money, asked—sad necessity—for a pair of boots on credit. Report saith not whether the refusal was kindly administered, but certain it was that the boots were refused to John Shaw; and he returned to his work a sadder man than he left it, protesting that he would work no longer than that day, and if success did not crown his efforts, he would cast the mud of Enniskillen from his old boots, and depart to more congenial climes. Moodily he took up his drill, and sternly struck it into the rock. Hark! What is that? A sound of liquid from the depths below, hissing and gurgling as it escapes from its confinement of centuries. Does it cease? No; on it comes, growing in volume every moment. It fills the pipe, it fills the well, still it comes. Five minutes, ten minutes, in fifteen minutes it has reached the top of the well, it overflows, it fills a tank, it overflows that. Vain are all attempts to check its career; resistless it pours in a mighty tide down the declivity into Black Creek, and is borne away by the waters. Who shall attempt to describe the feelings of John Shaw at that moment! We shall not, for we do not know how he showed them. The bystanders have not recorded whether he wept, or whether he took off his hat and shouted 'Hooray!' Anything might be excused at that moment, but we suspect that, like a philosophic Yankee, he went to work to 'save the *ile*.' But the report of the flowing oil spread like wildfire through the settlement, and 'Shaw's territory' became the centre of attraction. In the morning he had been called 'Old Shaw,' and if they had spelt his name with a 'P' before it, they could not have spoken of him more contemptuously. Now he was Mr. Shaw; and as he stood there, all covered with mud and oil, up came the storekeeper who had refused him the boots. That man of trade fully appreciated 'the situation,' he bowed before the rising sun, or rather the flowing oil-lamp, and almost embracing the dirty luminary, said, 'My dear Mr. Shaw, isn't there anything in my store you want? If there is, just say so.' What a moment for Shaw! we will not record his answer, it was far too forcible to be polite. The well was then flowing at a rate impossible to test with accuracy, but afterwards, when the yield was controlled, it produced two barrels of 40 gallons each in a minute and a half; which, at one cent and a quarter per gallon (the lowest rate at which the article has been sold), would produce 66 cents per minute, 39 dollars per hour, 950 dollars per twenty-four hours, and 296,524 dollars per annum, throwing off the odd cents, and not counting Sundays.

"The way in which these wells are sunk is as follows:—A hole of 5 feet diameter is made to the rock in the usual manner, the sides being cribbed up with timber to prevent them from falling in. When the rock is reached, a hole, say 2½ or 3 inches in diameter, is bored into it for a distance of a dozen feet; an iron pipe is then driven into the hole, in the same manner as piles are driven into the earth. The drill is next introduced; the cutting portion is of steel, shaped liked a common chisel, welded to a round bar of iron nearly as large in diameter as the iron pipe in which it is placed, and generally weighing between 200 and 300 pounds. The drill is suspended by a short rope to a beam overhead. When, after boring for a given time, the men think that so much rock has been loosened as to render it necessary to clear out the hole, the drill is wound up to the top by means of a windlass, and the sand-pump lowered. This instrument has to be used, when going through soft rocks, many times a day. Shells, coral, and small pieces of the strata are constantly brought to the surface, so that geologists can tell with accuracy the nature of the formations through which the drill passes.

"There is no doubt as to the amount of supply of Canadian oil for ages to come. The area of the oil-fields formation has been pronounced by the Government geologists to extend under 7,000 miles of the Canadian provinces, to control the abundance of the yield and to keep it in store, not until a market has been found, for that has been already accomplished, but until the means of reaching that market can be obtained, is the problem of the day. Capital has to be organized, refineries established, docks secured, ships purchased, a railway system opened, before the great fact of the mutual enrichment of England and Western Canada can be brought about and perfected."

THE FLOWERS THAT LOOK UPWARD.

A GROUP of young, light-hearted girls sat together in the twilight, busily arranging the flowers they had been gathering in the pleasant woods and fields.

"What beautiful things flowers are!" said one; "and what a pleasant amusement it would be, now that we are all sitting here so quietly, if each were to choose which flower she would be like."

"Just as if there would be any choice," exclaimed Laura Bennett, a little proudly. "Among all the flowers that grow, there is none to vie in beauty with the rose. Let me be the queen of the flowers, or none."

"For my part," observed her sister Helen, "I should like to resemble the luxuriant rhododendron, so beautifully described in our book of flowers. When any one passing shakes it roughly it scatters, as we are told, a shower of honey dew from its roseate cups, and immediately begins to fill its chalices anew with transparent ambrosia, teaching us to scatter sweetness even upon the hands of those that disturb us, and to fill again, with pure honey-drops, the chalices of our inward thoughts. Oh, who would not wish to be meek and forgiving, like the rhododendron, if they could? But it is very difficult," added poor Helen, with tears in her eyes.

"It is, indeed," said Lucy Neville, gently, "if we trust only to our own strength. And who is there to help us? It is only when my father looks at me in his grave, kind manner, that I have the slightest control over myself."

"What a pity it is," said Laura, simply, "we cannot always remember that the eye of our Heavenly Father is upon us."

"I wish I could," said Helen.

"I have heard mother say," observed Lucy, "that praying is better than wishing."

"Now, Clara," interrupted Laura Bennett, turning impatiently towards a fair, genteel-looking girl by her side, "we are waiting for you."

Clara smiled, and immediately chose the pale convolvulus, or bindweed, winding so carelessly in and out among the bushes, and flinging over them a grateful covering, an emblem of meek beauty and loving tenderness. "The only pity is," added she, "that it should so soon close up and fade."

"But what says our dear Lucy?" exclaimed Helen.

"I think I can guess," said Clara Seymore; "either a violet or heartsease. Have I guessed right?"

"Not quite," said Lucy, with a deep blush. "Although both flowers that you have named are great favourites of mine, I should like to resemble the daisy most, because it is always looking upward."

"Do tell me," said Helen, as they walked home together, carrying the flowers which they had gathered to adorn their several dwellings; "do tell me why you wished just now to be always looking upward, like the daisy."

"Oh, Helen! can you ask? What more do you require for happiness than to be able, let the cloud be ever so dark, to look upward with the eye of faith, and say, 'It is Heaven's will, and therefore it is best?'"

THE BISHOP AND THE BIRDS.

A BISHOP, who had for his arms two fieldfares, with the motto, "Are not two sparrows sold for a farthing?" thus explained the matter to an intimate friend:—

"Fifty or sixty years ago, a little boy resided at a village near Dillengen, on the banks of the Danube. His parents were very poor, and, almost as soon as the boy could walk, he was sent into the woods to pick up some sticks for fuel. When he grew older his father taught him to pick the juniper-berries, and carry them to a neighbouring distiller, who wanted them for making Hollands.

"Day by day the poor boy went to his task, and on his road he passed the open windows of the village school, where he saw the schoolmaster teaching a number of boys of about the same age as himself. He looked at these boys with feelings of envy, so earnestly did he long to be among them. He was quite aware it was in vain to ask his father to send him to school, for he knew that his parents had no money to pay the schoolmaster; and he often passed the whole day thinking, while he was gathering the juniper-berries, what he could possibly do to please the schoolmaster, in the hope of getting some lessons.

"One day, when he was walking sadly along, he saw two of the boys belonging to the school trying to set a bird-trap, and he asked one what it was for? The boy told him that the schoolmaster was very fond of fieldfares and that they were setting a trap to catch some. This delighted the poor boy, for he recollected that he had often seen a great number of these birds in the juniper wood, where they came to eat the berries, and he had no doubt but he could catch some.

"The next day the little boy borrowed an old basket of his mother, and when he went to the wood he had the great delight to catch two fieldfares. He then put them in the basket, and, tying an old handkerchief over it, he took them to the schoolmaster's house. Just as he arrived at the door he saw the two little boys who had been setting the trap, and with some alarm he asked them if they had caught any birds? They answered in the negative; and the boy, his heart beating with joy, gained admittance into the schoolmaster's presence. In a few words he told how he had seen the boys setting the trap, and how he had caught the birds to bring them as a present to the master.

"'A present, my good boy!' cried the schoolmaster, 'you do not look as if you could afford to make presents. Tell me your price, and I will pay it to you, and thank you besides?'

"'I would rather give them to you, sir, if you please,' said the boy.

"The schoolmaster looked at the boy who stood before him, with bare head and feet, and ragged trousers that reached only half-way down his naked legs.

"'You are a very singular boy,' said he, 'but, if you will not take money, you must tell me what I can do for you; as I cannot accept your present without doing something for it in return. Is there anything I can do for you?'

"'Oh, yes!' said the boy, trembling with delight; 'you can do for me what I should like better than anything else.'

"'What is that?' asked the schoolmaster, smiling.

"'Teach me to read,' cried the boy, falling on his knees; 'oh! dear, kind sir, teach me to read!'

"The schoolmaster complied. The boy came to him at all leisure hours, and learned so rapidly that the teacher recommended him to a nobleman residing in the neighbourhood. This gentleman, who was as noble in mind as in birth, patronised the poor boy, and sent him to school at Ratisbon. The boy profited by his opportunities; and when he rose, as he soon did, to wealth and honours, he adopted two fieldfares as his arms.

"What do you mean," cried the bishop's friend.

"'I mean,' returned the bishop, with a smile, 'that the poor boy was MYSELF.'"

THE MYSTERIES OF A FLOWER.

FLOWERS have been called the stars of the earth; and certainly, when we examine those beautiful creations, and discover them analysing the sunbeam and sending back to the eye the full luxury of coloured light, we must confess there is more real appropriateness in the term than even the poet who conceived the delicate thought imagined. Lavoisier beautifully said: "The fable of Prometheus is but the outshadowing of a philosophic truth—where there is light, there is organization and life; where light cannot penetrate, Death for ever holds his silent court." The flowers, and, indeed, those far inferior forms of organic vegetable life which never flower, are direct dependencies on the solar rays. Through every stage of existence they are excited by those subtle agencies which are gathered together in the sunbeam; and to these influences we may trace all that beauty of development which prevails throughout the vegetable world. How few there are of even those refined minds to whom flowers are more than a symmetric arrangement of petals harmoniously coloured, who think of the secret agencies for ever exciting the life which is within their cells, to produce the organised structure—who reflect on the deep yet divine philosophy which may be read in every leaf:—those tongues in trees, which tell us of eternal goodness and order!

The hurry of the present age is not well suited to the contemplative mind; yet, with all, there must be hours in which to fall back into the repose of quiet thought becomes a luxury. The nervous system is strung to endure only a given amount of excitement; if its vibrations are quickened beyond this measure, the delicate harp-strings are broken, or they may undulate in throbs. To every one the contemplation of natural phenomena will be found to induce that repose which gives vigour to the mind—as sleep restores the energies of a toil-exhausted body. And to show the advantages of such a study, and the interesting lessons which are to be learned in the fields of nature, is the purpose of the present essay.

The flower is regarded as the full development of vegetable growth; and the consideration of its mysteries naturally involves a careful examination of the life of a plant, from the seed placed in the soil to its full maturity, whether it be as herb or tree.

For the perfect understanding of the physical conditions under which vegetable life is carried on, it is necessary to appreciate, in its fulness, the value of the term *growth*. It has been said that stones grow—that the formation of crystals was an analogous process to the formation of a leaf; and this impression has appeared to be somewhat confirmed, by witnessing the variety of arborescent forms into which solidifying waters pass, when the external cold spreads it as ice over our window panes. This is, however, a great error; stones do not *grow*—there is no analogy even between the formation of a crystal and the growth of a leaf. All inorganic masses increase in size only by the accretion of particles—layer upon layer, without any chemical change taking place as an essentiality. The sun may shine for ages upon a stone without quickening it into life, changing its constitution, or adding to its mass. Organic matter consists of arrangements of cells or sacs, and the increase in size is due to the absorption of gaseous matter, through the fine tissue of which they are composed. The gas—a compound of carbon and oxygen—is decomposed by the excitement produced by light; and the solid matter thus obtained is employed in building a new cell—or producing actual growth, a true function of *life*, in all the processes of which matter is constantly undergoing chemical change.

The simplest developments of vegetable life are the formation of confervæ upon water, and of lichens upon the surface of the rock. In chemical constitution, these present no very remarkable differences from the cultivated flower which adorns our garden, or the tree which has risen in its pride amidst the changing seasons of many centuries. Each alike has derived its solid constituents from the atmosphere, and the chemical changes in all are equally dependent upon the powers which have their mysterious origin in the great centre of our planetary system.

Without dwelling upon the processes which take place in the lower forms of vegetable life, the purposes of this essay will be fully answered by taking an example from amongst the higher class of plants, and examining its conditions, from the germination of the seed to the full development of the flower—rich in form, colour, and odour.

In the seed-cell we find, by minute examination, the embryo of the future plant carefully preserved in its envelope of starch and gluten. The investigations which have been carried on upon the vitality of seeds appear to prove that, under favourable conditions, this life-germ may be maintained for centuries. Grains of wheat, which had been found in the hands of an Egyptian mummy, germinated and grew; these grains were produced, in all probability, more than three thousand years since; they had been placed, at her burial, in the hands of a priestess of Isis, and in the deep repose of the Egyptian catacomb were preserved to tell us, in the eighteenth century, the story of that wheat which Joseph sold to his brethren.

The process of germination is essentially a chemical one. The seed is placed in the soil, excluded from the light, supplied with a due quantity of moisture, and maintained at a certain temperature, which must be above that at which water freezes; air must have free access to the seed, which, if placed so deep in the soil as to prevent the permeation of the atmosphere, never germinates. Under favourable circumstances the life-quickening process begins; the starch, which is a compound of carbon and oxygen, is converted into sugar by the absorption of another equivalent of oxygen from the air: and we have an evident proof of this change in the sweetness which most seeds acquire in the process, the most familiar example of which we have in the conversion of barley into malt. The sugar thus formed furnishes the food to the now living creation, which, in a short period, shoots its first leaves above the soil; and these, which, rising from their dark chambers, are white, quickly become green under the operation of light.

In the process of germination a species of slow combustion takes place, and—as in the chemical processes of animal life and in those of active ignition—carbonic acid gas, composed of oxygen and charcoal, or carbon, is evolved. Thus, by a mystery which our science does not enable us to reach, the spark of life is kindled—life commences its work—the plant grows. The first conditions of vegetable growth are, therefore, singularly similar to those which are found to prevail in the animal economy. The leaf-bud is no sooner above the soil than a new set of conditions begin; the plant takes carbonic acid from the atmosphere, and having, in virtue of its vitality, by the agency of luminous power, decomposed this gas, it retains the carbon, and pours forth the oxygen to the air. This process is stated to be a function of vitality; but, as this has been variously described by different authors, it is important to state with some minuteness what does really take place.

The plant absorbs carbonic acid from the atmosphere through the under surfaces of the leaves, and the whole of the bark; it at the same time derives an additional portion from the moisture which is taken up by the roots and conveyed "to the topmost twig" by the force of capillary attraction, and another power called *endosmosis*, which is exerted in a most striking manner by living organic tissues. This mysterious force is shown in a pleasing way by covering some spirits of wine and water in a wine glass with a piece of bladder; the water will escape, leaving the strong spirit behind.

Independently of the action of light the plant may be regarded as a mere machine; the fluids and gases which it absorbs pass off in a condition but very little changed—just as water would strain through a sponge or a porous stone. The consequence of this is the blanching or *etiolation* of the plant, which we produce by our artifical treatment of celery and sea-kale—the formation of the carbonaceous compound called *chlorophyle*, which is the green colouring matter of the leaves, being entirely checked in darkness. If such a plant is brought into the light its dormant powers are awakened, and, instead of being little other than a sponge through which fluids circulate, it exerts most remarkable chemical powers; the carbonic acid of the air and water is decomposed; its charcoal is retained to add to the wood of the plant, and the oxygen is set free again to the atmosphere. In this process is exhibited one of the most beautiful illustrations of the harmony which prevails through all the great phenomena of nature with which we are acquainted—the mutual dependence of the vegetable and animal kingdoms.

In the animal economy there is a constant production of carbonic acid, and the beautiful vegetable kingdom, spread over the earth in such infinite variety, requires this carbonic acid for its support. Constantly removing from the air the pernicious agent produced by the animal world, and giving back that oxygen which is required as the life-quickening element by the animal races, the balance of affinities is constantly maintained by the phenomena of vegetable growth. This is a wonderful instance of the providence of God in Nature.

The decomposition of carbonic acid is directly dependent upon luminous agency. From the impact of the earliest morning ray to the period when the sun reaches the zenith, the excitation of that vegetable vitality by which the chemical change is effected regularly increases. As the solar orb sinks towards the horizon, the chemical activity diminishes—the sun sets—the action is reduced to its minimum—the plant, in the repose of darkness, passes to that state of rest which is as necessary to the vegetating races as sleep is to the wearied animal.

There are two well-marked stages in the life of a plant; germination and vegetation are exerted under different conditions; the time of flowering arrives, and another change occurs, the processes of forming the alkaline and acid juices, of producing the oil, wax, and resin, and of secreting those nitrogenous compounds which are found in the seed, are in full activity. Carbonic acid is now evolved and oxygen is retained; hydrogen and nitrogen are also forced, as it were, into combination with the oxygen and carbon, and altogether new and more complicated operations are in activity.

Such are the phenomena of vegetable life which the researches of our philosophers have developed. This curious order—this regular progression—showing itself at well-marked epochs, is now known to be dependent upon solar influences; the

"Bright effluence of bright essence increate"

works its mysterious wonders on every organic form. Much is still involved in mystery: but to the call of science some strange truths have been made manifest to man, and of some of these the phenomena must now be explained.

Germination is a chemical change which takes place most readily in darkness; *vegetable growth* is due to the secretion of carbon under the agency of light; and the processes of *floriation* are shown to involve some new and compound operations; these three states must be distinctly appreciated.

The sunbeam comes to us as a flood of pellucid light, usually colourless; if we disturb this white beam, as by compelling it to pass through a triangular piece of glass, we break it up into coloured bands, which we call the spectrum, in which we have such an order of chromatic rays as are seen in the rainbow of a summer shower. These coloured rays are now known to be the source of all the tints by which Nature adorns the surface of the earth, or art imitates in its desire to create the beautiful. These coloured bands have not the same luminating power, nor do they possess the same heat-giving property. The yellow rays give the most light; the red rays have the function of heat in the highest degree. Beyond these properties, the sunbeam possesses another, which is the power of producing chemical change—of effecting those magical results which we witness in the photographic processes, by which the beams illuminating any object are made to delineate it upon the prepared tablet of the artist.

It has been suspected that these three phenomena are not due to the same agency, but that, associated in the sunbeam, we have light, producing all the blessings of vision, and throwing the veil of colour over all things—heat, maintaining that temperature over our globe which is necessary to the perfection of living organism—and a third principle, actinism, by which the chemical changes alluded to are effected. We possess the power, by the coloured media, of separating these principles from each other, and of analysing their effect. A yellow glass allows light to pass through it most freely, but it obstructs actinism almost entirely; a deep blue glass, on the contrary, prevents the permeation of light, but it offers no interruption to the actinic or chemical rays: a red glass, again, cuts off most of the rays, except those which have peculiarly a calorific, or heat-giving power.

With this knowledge we proceed in our experiments, and learn some of the mysteries of nature's chemistry. If, above the soil in which the seed is placed, we fix a deep pure yellow glass, the chemical change which marks germination is prevented; if, on the contrary, we employ a blue one, it is greatly accelerated; seeds, indeed, placed beneath the soil, covered with a cobalt blue finger-glass, will germinate many days sooner than such as may be exposed to the ordinary influences of sunshine; this proves the necessity of the principle actinism to this first stage of vegetable life. Plants, however, made to grow under the influences of such blue media present much the same conditions as those which are reared in the dark; they are succulent instead of woody, and have yellow leaves and white stalks; indeed, the formation of leaves is prevented, and all the vital energy of the plant is exerted in the production of stalk. The chemical principle of the sun's rays alone is not therefore sufficient; remove the plant to the influence of light, as separated from actinism, by the action of yellow media, and wood is formed abundantly; the plant grows most healthfully, and the leaves assume that dark green which belongs to tropical climes or to our most brilliant summers. Light is thus proved to be the exciting agent in effecting those chemical decompositions which have already been described; but, under the influence of isolated light, it is found that plants will not flower. When, however, the subject of our experiment is brought under the influence of a red glass, particularly of that variety in which a beautifully pure red is produced by oxide of gold, the whole process of floriation and the perfection of the seed is accomplished.

Careful and long-continued observations have proved that in the spring, when the process of germination is most active, the chemical rays are the most abundant in the sunbeam. As the summer advances, light, relatively to the other forces, is largely increased; at this season the trees of the forest, the herb of the valley, and the cultivated plants which adorn our dwellings, are all alike adding to their wood. Autumn comes on, and then heat, so necessary for ripening grain, is found to exist in considerable excess. It is curious, too, that the autumnal heat has properties peculiarly its own—so decidedly distinguished from the ordinary heat, that Sir John Herschel and Mr. Somerville have adopted a term to distinguish it. The peculiar browning or rays of scorching autumn are called the *parathermic* rays: they possess a remarkable chemical action added to their calorific one; and to this are due those complicated phenomena already briefly described.

In these experiments, carefully tried, we are enabled to imitate the conditions of Nature, and supply at any time those states of solar radiation which belong to the varying seasons of the year.

Such is a rapid sketch of the mysteries of a flower. "Consider the lilies of the field, how they grow; they toil not, neither do they spin; and yet I say unto you, Solomon in all his glory was not arrayed like one of these."

Under the influence of the sunbeam, vegetable life is awakened, continued, and completed: a wondrous alchemy is effected; the change in the condition of the solar radiations determines the varying conditions of vegetable vitality; and in its progress those transmutations occur which at once give beauty to the exterior world, and provide for the animal races the necessary food by which their existence is maintained. The contemplation of influences such as these realises in the human soul that sweet feeling which, with Keats, finds that—

"A thing of beauty is a joy for ever;
Its loveliness increasing, it will never
Pass into nothingness, but still will keep
A bower quiet for us, and a sleep
Full of sweet dream, and health, and quiet breathing.

* * * *

"Such the sun and moon,
Trees old and young, sprouting a shady boon
For simple sheep; and such are daffodils,
With the green world they live in."

THE GEYSERS.

"THOSE Geysers are very wonderful things," said Mr. Horton, as he closed a book he had been reading for an hour or two.

"What are they, papa?" said Willy; "will you please to tell me?"

"They are fountains that throw vast quantities of hot water and steam to a great height into the air."

"In what part of the world are they found?"

"In Iceland. One of them, which is called the Great Geyser, is described as presenting the appearance of a large mound. You go up its sides, and you find a large basin at the top. It is not quite round, being fifty-six feet across in one way, and forty-six the other, and about four feet deep. In the centre there is a hole or pipe going down into the earth seventy-eight feet. This pipe is about eight or ten feet in diameter, widening as it opens into the basin. The hot water rises up through the pipe, and fills the basin, and then runs off over the sides. Every few hours there are heard loud reports, like that of distant artillery, in the earth beneath the basin, and then water is ejected from the pipe with great violence and to a great height."

"How high does it rise?"

"It varies: sometimes the column of water is thrown up twenty or thirty feet, sometimes fifty feet, and sometimes as high as seventy or eighty feet. Think of a column of water eight or ten feet in diameter, thrown up seventy feet, with a tremendous roar, and a cloud of steam along with it?"

"I should think it would be one of the most wonderful sights in the world."

"It is so."

"Does it rise swiftly?"

"Very swiftly. Sometimes large stones are thrown up. Sometimes visitors throw stones in the pipes, and they are thrown out and up into the air, where the water is thrown up, and sometimes they are kept up in the air for four or five minutes by the action of the water. There are a great many smaller Geysers in the vicinity of this larger one. Mr. Henderson, who visited them in 1814, thinks he discovered the key of one of the largest of them."

"The key! what did he mean?"

"They throw out the steam and water, as I said, at intervals. After there have been loud reports, and a shaking of the earth, and an ejection of water and steam, they will be quiet for some time, so that the spectator may have to wait several hours, perhaps, before he may see them in operation again. Mr. Henderson found that, by throwing a quantity of large stones into the opening, he could cause it to make an irruption whenever he pleased. At one time, when it had been excited to action in this way, it threw up jets more than two hundred feet high."

"It seems as though he made it angry by throwing stones into it."

"When the sun was shining on these jets, they presented a most brilliant appearance. The water appeared as white as snow, and rainbows were seen all about it. Besides the water-pipes, there are a great many steam-pipes in the vicinity—that is, holes in the earth, out of which columns of steam issue. The clouds of steam sometimes thrown out cover the whole heavens from the view."

"Is the water hot water?"

"Yes, it is very hot; and spectators often get scalded by its falling upon them. At one time, Mr. Henderson was looking into the pipe of one of the largest, and the column of scalding water came up as swift as an arrow, withing a few inches of his face."

"I suppose he ran. But what is the cause of the water's spirting up so?"

"I can tell you the general cause by which it is thrown up, though I cannot explain the particular manner in which it is done. The volcanic fires underneath are the cause. The fires are near the surface, and the phenomena we have been considering are caused by their action."

"Isn't it dangerous to be there?"

"It is. The crust of earth over the fire is very thin, and may fall in at any moment."

"What makes the fire there?"

"I can't answer that question. Probably all the interior of the earth is one mass of fire."

"One mass of fire! Do you suppose there is fire under our feet?"

"I presume there is; the crust between us and the fire is much thicker than in volcanic countries."

"But still it may burn through. I did not think that we were in so much danger."

"We are always in danger—are never safe but when in the Almighty's hand. There alone is safety. If we put our trust in Him, we are safe anywhere. If we do not, we are safe nowhere. Put your trust in God, then, my children, at all times and in all places."

FOR WHAT DO WE LIVE?

FOR what? Were this question propounded to one who has been fashionably educated, according to the customs of the nineteenth century, and who had never given the subject a serious thought, he would be sadly puzzled for an answer.

Go to the *model* man of business,—the shrewd, prudent, time saving, money gathering man of the world,—tell him truthfully, but plainly, that he has been for years bending every power and every energy, with a zeal that has known no dampening, and a perseverance that has known no relaxation, for the purpose of gathering a pile of the shining ore,—that *this* has been the grand aim of his life: and will he not reject the charge with scorn?

Speak to the votary of fashion, and of pleasure—to him who has never questioned the truth of the pretty commonly received opinion, that dress, name, and wealth are the principal requisites to make the man, and that in most cases any one of them is sufficient to do it;—ask *him* of the worthy objects of his life? Can he reply?

Ask the public man;—for long years he laboured unweariedly and unremittingly in the pursuit of fame. The midnight lamp oft grew dim ere he sought his couch; and he left no stone unturned to gain the desired result. At last he found it; inquire of him for what mankind should live,—and with an honest heart can he respond without condemnation?

Bring the question home. Let us pause a moment in the vast current that is bearing us along, as becomes reasonable, intelligent beings, and calmly propound the inquiry to our own hearts. Let us look back through the mists and mazes of the past, recall the motives that have actuated us, and the ends we have pursued. For what have *we* lived? Have we ever had a beacon to direct our course, that was for one moment worthy the attention of reason?

How many in this boasted age of wisdom and improvement—this land eulogised as the home of all that is pure, all that is virtuous, and all that is noble—would they rigidly examine themselves, could boast that they had ever been actuated by motives that might justly demand for them a place in that part of the scale of being allotted to man?

How many have lived *only* for the animal and the sensual, with no aim but the gratification of appetite and passion, and no knowledge, or, at least, no acknowledgment of a higher and a better part of man!

How many more who, if they have not pursued a course so diametrically opposed to every dictate of reason and virtue, have followed one hardly less culpable, by making pleasure and fashion their gods, and spending time—that richest of heaven's gifts to man—in trifling and frivolity! Who shall number the thousands of human lives that have passed in no higher employments than these of adorning the fancy? Were *such* wisely spent?

And others, too, an innumerable host, whose highest aim has been to procure a subsistence in life, and minister to the wants of sense, without ever thinking to arouse those latent powers of mind with which they are blest. That these aims are honourable and commendable, in their proper place, no one can doubt; but are they worthy to command all, or even the highest attention of rational beings?

Inasmuch as man is found above the brute, even in the glorious image of the First Great Cause—in just so much is the intellectual above the animal, the moral above the intellectual. He who lives only, or principally for the gratification of sense, deserves the lowest place among men. He who seeks to expand the mind and enlarge the faculties, pursues an end far higher; and he who combines with this a steady, firm attempt to educate and train aright his moral nature, has the very highest aims in view.

However humble may be his station in life, aye, though he may drink to the very dregs of the cup of poverty, he is the noblest specimen of man—the noblest work of God.

ASTRONOMY.—THE STARS, THEIR HISTORY AND LAWS.

"Sister, will you not walk with us?" said Ellen Graham to Mary, one evening, as she found her on the porch of their father's elegant mansion. "Here are some of my classmates, Eliza, Rosa, and Nancy, who were so much delighted with your instructions when you walked with us a few evenings since, and they have come with me to beg you to go again. We have been studying the trees, plants, animals, and even the rocks, and find in them beauties we never thought of before we took that delightful walk to the spring, and you explained to us some of the wonders of the natural world, in the midst of which we live."

"Girls," said Mary, "I suppose that, like many others, you are reciting lessons at school without looking about and reading in the great book of Nature the most wonderful lessons, and applying the knowledge which your books give to solving her mysteries. In fact, you have studied as though you were learning of things which you never saw. I am glad that our conversation at the spring has awakened in you a desire to study nature, and, if you continue to feel an interest, I shall be happy to turn over many leaves with you in this great book. I propose that we take our own home, and, considering this a miniature world, study its natural history in all the various departments. Thus you will be enabled to apply the principles you find in your books of philosophy and natural science to the world around. Then every rock, tree, brook, and shrub will seem to speak an intelligible language to your souls. It is too late to walk now, for the stars are already twinkling, and the frost is sparkling on the grass, so we will confine ourselves to the porch this evening. But, if you choose, we can wander for awhile in the 'garden of Deity, blossomed with stars,' and study those shining bodies whose laws and phenomena are intimately connected with our earth, and may properly be introduced into our natural history. In studying geography you all learned your latitude and longitude, but perhaps you did not know that it is to observations on the heavens we owe this knowledge. By applying your mathematics you will soon be able to tell the exact latitude and longitude of this house, and calculate the times for the rising and setting of the sun, moon, and stars, for every day in the year."

"Why, sister," said Ellen, "I have always looked in the almanac for these things, and never once thought that I could find them out for myself. I thought that it was a kind of magical guess-work; but now I understand that we all, by study, may become magicians enough to make an almanac if we choose. As for the stars, I have looked at them with a strange kind of fear and wonder. When a little child my old nurse taught me they were holes in the sky to let the glory of Heaven, which was above, shine through. Then, again, I thought they were angels' eyes, which were closed in the day because the sun was so bright, but at night they opened them, and winked as they looked down upon us. I have since learned that these stars are worlds, and have observed that we do not always see the same ones. So, sister Mary, I am prepared to be interested in your instructions."

"Girls, we will then commence at once, as a few of the largest stars have already opened their eyes, as Ellen might say. In reality, they have been shining all day as brightly as they do now, but we did not see them because the light of the sun was so much greater. The stars are always shining, and as soon as the sun goes out of sight at any place they appear. The atmosphere has the property of reflecting the light in all directions, and could we find a place where we were not exposed to this reflection, we could see them as well as at night. One time a man in London, while looking up a tall chimney in the day, saw the stars distinctly. Curiosity to understand this strange sight led him to study, and in time he became a great astronomer. Persons who have entered deep wells have observed the same, and, being ignorant of the cause, have in great fright come to the upper air to see what calamity had thus suddenly brought on the night. As the earth turns over every twenty-four hours there has been in succession starlight and sunlight around its whole circumference. As we are sitting on the porch the parlour lamp shines brightly through the window, and we can see the stars over our heads in the east. Now, were we to take a ball, and on it place a little being as large as a fly, and commence turning the ball towards the east, the lamp would seem to sink in the west, while the stars would rise in the east, and pass over its head. The fly would, probably, think that all these bright bodies were moving around his little ball. This will not seem a strange conclusion for the silly fly, when we remember that many of the ancient philosophers thought that all the worlds we see in the heavens moved around our earth every twenty-four hours. They also thought that the earth was flat and stood on the back of some huge animal, but what held the animal they could never tell. That the earth is round or convex we have many proofs. I will mention one of the most simple. When you are riding over a plain you first see the tops of trees and houses in the distance, and as you approach they seem to rise. When you have studied more you will be able to understand the measurements and calculations of astronomers to learn the shape of the earth."

"Sister," said Ellen, "David knew the shape of the world: for I was reading in the Psalms this morning where he says of the Lord. 'He hath made the round world.' And I heard the little children reciting from their geography to-day that the world is upheld by the power of God; and they gave a text from Job: 'He hangeth the earth upon nothing.' I will bring a geography, and by the lamp shining through the window we can look at a picture of the world."

"Girls," said Mary, "you can see by this picture that what is up to a man on one side of the earth, is down to one on the opposite side; the zenith, or point over our head, is constantly changing, and the stars that is there now will, twelve hours hence, be beneath us, or up to the people in China. All we can mean by up is from the earth. It is now six o'clock in the evening of the first day of January, and we will date our observations from this time. You will see in the east a group of very bright stars consisting of two beautiful clusters; one consists of seven small stars called the Seven Sisters, or Pleiades. A little to the east of these is the other cluster, called Hyades, in the form of a letter A. The whole group is known by the name of Taurus, the Bull. When we go into the house you can look at a plate of it, and you will find the Pleiades mark one shoulder, and Hyades the face of the animal. If you will look out again about nine o'clock, you will find it nearly overhead, and again towards morning it may be seen going down in the west. Now imagine yourselves the fly on the ball, and you can explain the apparent motion."

"Miss Mary," said Rosa, "I see the beautiful clusters very distinctly, but they do not make the figure of an animal. Why was the name Taurus given to the group?"

"These heavenly bodies, Rosa, have been subjects of study in all ages, and among those who knew not the true God, they were made objects of worship. It was the custom of the eastern nations to make gods of the animals they held in the highest esteem, and also of those persons who had done any great deeds. These people were attentive observers of the sky, and as they supposed heaven, or the place of reward was above, they learned to think there must be the dwelling place of their favourite deities. They accordingly marked off the heavens into portions or constellations, and to these gave the names of their gods, whether men or animals."

"I suppose," said Nancy, "as they had no idea of worshipping a God which could not be seen, they thus elevated their deities to the highest throne they could give them, where all might see and worship."

"As we study out the heavens," said Mary, "we shall find it a great book in which the ancients expressed with the stars their strange ideas; thus we shall enjoy a double pleasure. The bull was a sacred animal with the early Egyptians, and highly venerated as a god; he was therefore honoured with a place in that beautiful group which we see in the east. The Pleiades are said to be named from seven sisters, who were thus favoured on account of their affection and virtues. One of these unfortunately married a mortal, and her star never after shone so brightly; consequently, you can seldom get a sight of it. The whole is probably a fable; the sisters representing the virtues which were most esteemed, and the dim star a virtue which had been obscured by vice."

"I suppose, then," said Eliza, "we need not learn from this amusing tale that we must marry none but gods. But hereafter, when we look up at the group of sisters in the heavens, their history shall teach us to beautify ourselves with all the virtues that ornament a woman."

"Girls," said Mary, "you have had your lecture, and Eliza has drawn a conclusion which we hardly thought of reaching when we commenced. I will only remark, that Taurus is one of twelve constellations which mark the sun's apparent path through the heavens; all of which we will notice before we mention others."

THE CAUSE OF WINDS.

Sydney. Come, children, the weather is too cold, and the wind blows too hard for you to play in the open air to-day; and if you will hear me and listen, I will tell you something about winds.

Henry. Oh do, Uncle Sydney, we shall be so glad to hear it.

Sydney. Now, I am going to tell you about the wind which you hear roaring without; and you may ask me questions about it, when you do not clearly understand, or when you wish to know more.

George. Thank you, uncle, I should like to know what wind is.

Sydney. Wind is air in motion.

George. But what puts the air in motion?

Sydney. It is put in motion by heat. Heat causes the air to expand, and thus it becomes lighter than the cold air, and rises up, when the cold air rushes in to fill its place.

Henry. What heats the air?

Sydney. The rays of the sun heat it. They do not heat it by passing through it, but by contact with the earth. This heat varies in temperature, as the surface of the earth is more or less directly exposed to the influence of the sun; hence the air is not all heated alike.

George. I think I understand you, uncle; and that must be the reason why it is so much warmer on the side of a hill towards the sun than on the opposite side.

Sydney. Well done—you are right, and that is a good illustration.

Jane. I did not think the air could be made to grow larger, or expand, as you call it, uncle.

Sydney. Do you know, Jane, how George makes his foot-balls?

Jane. Oh yes; he takes a bladder, and blows into it, through a quill, till it will contain no more air; then he ties it up, so that no air can escape, and crowds it into a leather case which he laces up tight.

Sydney. Well, when he had blown into the bladder but a little while, it was full of air; but the bladder was still soft, so he continued to blow into it until the air became very dense, and thus made it hard.

Mary. Then air can be made smaller, too, can it?

Sydney. Yes, Mary, air can be compressed, or made smaller, as you term it, as well as expanded. Now I will tell how you may know that it is so. Take a bladder that is not quite full of air, and be sure it is tied up so tight that no more air can get in or out: then hold it near the fire, and it will soon be quite full and hard. This is because the air in it has expanded.

George. Now I know why the bladder burst, which I blew full of air and held to the fire to dry, the other day: it was because the heated air swelled so much that the bladder was not strong enough to hold it.

Sydney. You are right, George, and I am glad to see you so thoughtful and ready to apply the knowledge you derive from our conversation to the explanation of things you before thought so strange.

Emma. Will the air in the bladder remain swelled all the time?

Sydney. No, my dear; if you put it in a cold place, it will soon become as small as it was before it was heated. Now I trust you all understand that air will expand by heat and contract by cold.

Mary. Yes, I think all of us understand that now; but I should like to know how to prove that the heated air rises, since we cannot see it go up.

Sydney. You know that if you hold your hand over a burning candle or lamp, that it will burn you when your hand is many inches from the blaze, but you can hold your hand very near the side of the flame without feeling the heat. It is because hot air rises. When a fire is made in a grate or fireplace, it heats the air around it, and this heated air rises up the chimney and carries the smoke along with it. If it was not so, chimneys would be but of little use in conducting the smoke from our rooms. There is a simple experiment which will illustrate that the cold air takes the place of warm and light air.

George. What is that, uncle? I am fond of experiments.

Sydney. It is this: when the air in a room is warmer than the air outside, by opening the door a little, so as to leave only a small crack, and holding a lighted candle at the top, the flame will be bent outward. This will show you that the air is flowing out of the room. Then, by placing the candle near the floor the flame will be bent toward the room, thus showing that a current of air is rushing in to take the place of that which goes out. If the room is very warm, you can easily perceive, from holding the candle in these two currents, which is the warm one and which one is cold.

Henry. Now I think I know why the wind blew from all directions toward the fire when Mr. Carter's house burned; it was because the heated air ascended so fast that the cold air flowed in from all sides to fill its place.

Sydney. — A correct conclusion, Henry; and I am pleased that you understand the principles of wind so well.

PHOTOGRAPHY.

The principle of this art depends upon the property which certain chemical preparations, chiefly those of silver, possess of being blackened by exposure to light while in contact with organic matter, and that in so gradual a manner that every degree of shade may be represented. Now, as the various appearances of everything we see depend upon the effects of light and shadow, it follows that if these lights and shadows can be transcribed, we shall have a representation of the objects, minus their own proper colours, and this is exactly what photography effects. It is now a well-known fact that James Watt had discovered the art of taking sun-pictures by the means of light acting on a solution of nitrate of silver, and that he was requested by Sir William Beechey to suppress the knowledge, as it would be the ruin of every portrait painter in the kingdom. It is to M. Daguerre, however, that we are indebted for making known one of the most beautiful of all our scientific arts.

As our space will not permit us to enter at large on this interesting subject, we shall content ourselves by giving a brief account of the mode of procedure in taking portraits or photographic pictures.

The choice of materials and the necessary apparatus demands a primary notice. The most important item is the lens, and this must be selected according to the work it is intended to produce.

For portraits the double achromatic lens is the best, and for *cartes-de-visite* from negatives the lens should have a larger aperture than the one used for positives. The next object required is the camera, or dark box in which the lens is fixed. The tripod, or stand for the camera, should be strong and steady, especially the one for the operating-room. If the operator uses a half or a full plate lens, the operating room should be at least seven yards long. The next item of absolute necessity is a dark room or closet, in which to fix the picture after it has left the camera. Into this apartment the light of day should never be allowed to enter, except transmitted through *yellow* glass; for if, by any neglect, delay, or carelessness, the light falls on the picture, the object will be destroyed, and the whole surface become black. If the operator is desirous of taking pictures on glass, his first consideration will be a fitting room in which to take his portraits; if he has the command of a gallery or glass-house, he has all he can desire; if not, it is quite possible to take good portraits in the open air, all that is requisite being a background, with an awning projecting over the head of the sitter. In all cases, however, the dark room must be close at hand, so that no time may be lost between the several stages of the process—between exciting the plate and its exposure, and between removing it from the camera and fixing it in the bath.

The dark room, fitted with a window of yellow glass, should contain a dipping-bath for the nitrate of silver solution, glass dishes, funnels, chamois leather, glass rods, and other necessary chemicals; a sink, slop-stone, and an abundant supply of water. The artist, having placed his sitter ready, and firmly arranged his camera, must, in the first instance, coat the glass plate with collodion, a small quantity of which should be kept in a phial for use. The glass should be perfectly clean, and polished with the chamois leather, as the least trace of dust or grease will completely ruin the picture. The glass plate should be held firmly in a horizontal position by one corner between the thumb and finger of the left hand; a sufficient quantity of collodion to cover the plate is then to be poured on the centre of the glass, and to insure its spreading equally it is first to be inclined to one corner, then to the opposite, till spread equally over its surface, the residue being allowed to run off into the bottle at the opposite angle to that by which the plate is held. Care must also be taken that the collodion does not touch the thumb. As soon as the collodion is dry, but not before, the plate must be immediately immersed at one rapid and perfect plunge completely under the silver solution, as any, the slightest, pause will produce a line across the plate. The solution, or silver bath, as it is called, is prepared by dissolving 30 grains of the triple nitrate of silver in 1 ounce of distilled water. The quantity made must depend upon the size of the bath and the plate used, but the above are the proportions requisite. When not being used the bath should be emptied into a stoppered bottle. The time required to iodize the plate effectually is three or four hours. The next step in the process is to set the plate on the dipper, as soon as the collodion is firm, it is then plunged into the bath as just described, where it should remain for about a minute; it is then drawn out, and after a brief rest plunged again in for a second and perhaps a third time; the plate is next allowed to drip on blotting paper, and then removed to the carrier of the dark slide prepared side downwards. The artist then returns to his sitter, adjusts him so as to get the proper focus, which he effects by getting the camera into such a position as to throw the image most distinctly on the ground glass, the operator's head being all the time covered with a piece of black velvet or dark coloured cloth. He then tightens the screw of the camera, and makes the fine adjustment by the rack of the lens. The next step is to remove the focus-glass from the camera, place the dark slide with the prepared plate in its place, fix the cap on the front of the lens, and draw up the sliding door of the dark slide. The cap is afterwards removed from the lens, and the figure of the sitter is thrown on the prepared plate; a few seconds of exposure and the delineation is complete; the cap is again replaced on the lens, but steadily, and without the slightest bungle; the sliding door of the dark slide is put down, and the slide at once removed from the camera to the dark room with the greatest possible dispatch, where it is subjected to the final process of development.

To effect this next step the plate is to be taken out of the slide, and being held in the same manner as when applying the collodion, pour on the *bottom of the plate* sufficient of the developing solution to cover it quickly, inclining the plate from side to side in such a manner as to effect the purpose quickly. If this solution should be poured in one place on the centre of the plate it would be sure to produce a stain. When the shaded parts of the portrait begin to appear, pour off the solution, and wash well under the tap.

The developing solution is prepared with the following ingredients, care being taken that whatever quantity is made the proportions are faithfully observed. Dissolve 12 grains of the protosulphate of iron and 6 grains of nitrate of potass in 1 ounce of distilled water, then add 16 drops or minims of glacial acetic acid, and 10 minims of alcohol or spirits of wine. When the plate has been thoroughly washed there is no longer any occasion to exclude the white light, and the yellow stained window may now be opened. The next and final step in the process is that of fixing the picture. This may be effected either by putting the plate in a dipping-bath, in the manner adopted in the silver bath, or by laying the plate in a glass or gutta percha dish, and pouring over it the fixing solution, prepared in the following manner. Dissolve in 1 ounce of distilled water 10 grains of the cyanide of potassium and half a grain of the nitrate of silver. As soon as the yellow iodide of silver is dissolved, wash the plate well back and front, and dry it. When dry, pour some transparent varnish on the collodion side, and some dead black varnish on the other, or place a piece of black or maroon velvet behind it.

Care must be taken to exclude all dust from the dark room. As soon as the collodion is dry or set, which only takes a few minutes in warm weather, the plate should be directly plunged into the silver bath. In fine weather from three to five seconds will be long enough for beginners to expose the plate, observing by repetition the proper time required. If the plate has been *too* long exposed the picture will appear the instant the developing solution touches the plate; if, on the other hand, it has been exposed for too short a time the solution will take from three to five minutes to develop the likeness, and the portrait, as a consequence, will prove a failure.

A JOURNEY OF DISCOVERY ALL ROUND OUR HOUSE.

JOURNEY SEVENTH.

OUTSIDE THE HOUSE—BRICKS, ASSYRIAN AND ENGLISH—TILES AND SLATES—GILDED ROOFS.

HAVING investigated the heart of our building, and seen in full operation that seat of hospitality and cheerfulness, the fire, we shall request our fellow-travellers to accompany us for a short peregrination round the outside of our house. What though the walk may be confined, and the prospect circumscribed and apparently dull and commonplace? it will go hard if we do not pick up some few fragments of information, that shall both improve the occasion and throw additional interest on the subject.

It is quite true, as perhaps some of our companions may observe, that the prospect is monotonous enough at first sight, but only at first sight; we shall find something behind this shell-work of brick, stone, compost, and plaster, and something probably in the history of the articles themselves, well worthy of all the attention we bestow upon them. What the highly organized article, and the delicate epidermis, with "its fell of hair," as Macbeth calls it, are to the human tenement, these courses of brick, dressings of stone, overlays of plaster and slates, are to the domestic structure, which we call in its entirety a house; for not an hydraulic pump, not a pneumatic apparatus, not a mechanical invention, nay, not even that greatest of human discoveries, the electric telegraph, but the Almighty has been showing mankind for six thousand years in hourly operation, in the lowest as well as in the highest of His creations. Man has been for ages a groping pupil and a purblind imitator, and it is only now, in the fifty-ninth century of the world's age, that he may be truly said to have become a real scholar, with judgment to see, intelligence to appreciate, and capability to adapt for human benefit, what he has seen and understood of the internal wonders of life.

That man should build himself a tenement in some degree after the model of his own body required only the rudimentary knowledge of the savage to effect; and as long as a mere tegument sufficed as a covering for his necessities, he was content with a lattice-work of twigs, interlaced with grass or leaves, or the sun-tanned hide of a horse or buffalo for his domestic abode. As, however, the savage merged into the barbarian, and under the ægis of Roman civilization grew into a reflective and intelligent being, he demanded something better for a home than his wattle hut and tent of skins.

Bricks.—The homely house of brick and compost, with its methodical and cleanly windows, its neat door and domestic and useful appurtenances, though to our view commonplace enough, would to the ancient Briton, the Anglo-Saxon, or even to the luxurious Norman, have seemed little less than a palace or a royal lodging; so wonderful to them would have appeared those items in the construction which we regard, if not with contempt, at least with perfect indifference. Let us examine, then, how this structure, so imposing to our ancestors, and so commonplace to us, has reached its present state of comparative perfection. We have already shown how the earliest habitations of man were fashioned, and that the dwellings of the native Briton were in character exactly like a miniature glasshouse or kiln, and how, under the Saxons, they changed their shape from a round to a square or a parallelogram. In each, however, wood, grass, straw, reeds, and mud, formed the materials out of which the domestic building was constructed. Wood, however, as we have seen, became so scarce, from the prodigal manner in which it had been used for centuries, that in supplying habitations for the growing population it was necessary to discover another material, and one at once comparatively cheap and easy of access. This article was brick, which though one of the oldest materials used in architecture, both ecclesiastical and domestic, and brought into Britain by the Romans, was not revived in this country till about the middle of the fourteenth century, and then we owe its introduction to our intercourse with the Flemings, the Saxons, and the Normans having utterly destroyed all vestige of Romano-British brickwork.

Having found our new material, we will take the opportunity, while the bricklayer is running his courses and building up the framework of our house upon a skeleton of wood, to inquire into the origin and history of bricks.

We have already said that bricks were the oldest building materials used; and we have Scripture history to prove that when mankind first collected on the plains of Shinar, on the bank of the Euphrates, it was brick which was employed to build the Tower of Babel, and subsequently to erect the stately palaces and lofty walls of imperial Babylon. It may seem singular that while Roman bricks, with their makers' names, and almost as perfect as when first made, are being every day dug out of the earth, where they have lain in all probability for more than a thousand years, hardly a vestige of those used for the building of Nineveh and other cities of profane and sacred history is left to show their shape, or lead us to a conjecture of how they were fashioned. The ancients both baked their bricks and dried them in the sun; but as the fall of rain was very rare in the East, or fell at defined seasons, sun-drying was the general method of procedure.

The Egyptians, we know from sacred writings, used bricks largely, and in such quantities, indeed, that they kept the Israelites confined to that one occupation in the land allotted to them in Goshen. That bricks were made in Egypt of clay and chopped straw—the straw being used as hair now is in mortar, to bind the material together—there can be no doubt, from the frequent complaints of the Israelites to their imperious taskmasters that they could not make the prescribed tale if deprived of straw. When the haughty mandate came that they *must* supply the same monthly or annual number, and that too *without* straw, the helot Israelites no doubt employed reeds, rushes, and even cut leaves as a substitute for the proper and necessary article. In general, the bricks so made by the Jews in Egypt seem to have been employed to build walls to the temples, and for the construction of tombs. In Greece, bricks made after the same style as those of Syria and Egypt, were in use long before the establishment of Roman supremacy.

The Romans, however, about the period of the decline of the Republic, or half a century before the Christian era, seem to have acquired consummate art in the manufacture of bricks, which were made of three sizes, and appear to have been well and effectually burnt. The Greek bricks seem to have required from two to five years effectually to dry and harden in the sun before they were fit for use. Farther east, of course, and on the arid plain of Shinar, the process of sun-drying must have been much shorter, and far more effective than that on the humid shores of the Hellespont; or such structures as the Tower of Babel and the vast walls of Babylon could never have been undertaken or completed. When we therefore remember that the bricks used in Nimrod's city and the empire of Syria were either composed of the fat, unctuous clay of the plain, everywhere impregnated by springs of asphalte, or simply of chopped straw and clay mixed with *slime—in other words, bitumen*,—and that the same substance was employed freely as a cement or mortar to bind together the courses of brick, we have no difficulty in understanding how it was the divine curse had been so literally fulfilled on those denounced cities.

Fire has ever been the handmaid of war, and when the sword grew blunt with slaughter, the torch came in to consummate the vengeance of the infuriated soldiery, who having depopulated the city of its defenders and exterminated its wretched inhabitants, committed the town to pillage and to flame.

Let our fellow-travellers picture to themselves an embattled city with walls 80 feet thick and 350 high, enclosing a number of stately temples and palatial abodes, and a confused heap of huts with intersecting lines of road leading to the various gates, and fancy the whole constructed of sun-dried bricks, made as we have described, and the whole cemented together with asphaltum; and then imagine flame applied to this magazine of combustible material; it will require no stretch of the imagination to realize the wild and rapid conflagration that would follow, or picture the state of crumbling dust to which the walls and houses would be reduced, when all the straw and bitumen had been consumed till it left "not a wreck behind."

Bricks, as we have just seen, were not only known to the Syrians—the earliest recorded nation,—to the Assyrians and Egyptians, but to the Greeks and Romans. It is to the latter nation, however, that *we* owe what may be called the true art of brickmaking; for a people who knew so well how to prepare such splendid encaustic tiles were sure to have manufactured bricks of the finest quality, a fact exemplified by one of the sights of imperial Rome, Trajan's Column, which was constructed entirely of circular bricks. That the Romans taught the Britons the art of brickmaking is incontestible, from the number still found in what are known to be Roman remains; besides, that the luxurious villas built in every part of the island, as well as the improved dwellings of the natives, were all constructed either entirely or in a great measure of bricks, we have evidence enough to prove. But with the retirement of the Romans, the irruption of the Northern barbarians, and the long subsequent struggle between the Briton and the Saxon, a moral darkness like the plague of Egypt fell on the nation: art, learning, civilization itself was trodden out; and the people, driven back to their native woods and mountains, became in a few years as illiterate, gross, and barbarous as their ancestors, the painted warriors, whom the Cæsars first defeated and then civilized.

Though the Saxon built keeps and churches, and the Norman covered the land with castles and cathedrals, neither seemed to devote a thought to the exigencies of the people; and though the franklin and the vavasor were, according to their tastes and ideas, comfortably lodged, neither of them gave a thought to the social or domestic enjoyment of their thralls or serfs; and, as a consequence, the great mass of the people were uncared for or totally neglected, and only met a grudging recognition as hewers of wood and drawers of water, or as food for the insatiate Até of war.

Little progress then was made in what might be called the domestic architecture of the people, till the time of the Tudors, and even then the general mass of the public were lodged in habitations little better than styes. It must not be imagined, however, that if badly lodged, our ancestors were also badly fed. By no manner of means; indeed, the abundant fare and wretched houses of the English gentry so excited the amazement and disgust of the Spaniards who accompanied the haughty Philip when he paid his occasional visits to this country to see his wife, Mary, that they declared to their countrymen at home, that "these English, who are lodged no better than beggars, and whose houses are made of sticks and dirt, yet do fare commonly as well as kings."

When the massive timber homesteads of the wealthy yeoman became the fashion, in the time of Henry VIII., they afforded a subject for the sarcasm of some cynical writers of the time, who, looking with contempt on the effeminancy of the age, declared that while we were content with houses made of willow and wattle, we had men of *oak;* but now that we had oaken houses, our men were only of *willow.*

Though as far back as the reign of Richard II. the use of bricks had been revived in this country, the art of making them being obtained from the Flemings, and the town of Kingston-on-Hull, entirely rebuilt and beautified with them, it was nearly two centuries later before that cheap and convenient article became generally popular; and it is highly probable it would not then have been employed for building purposes had not the use of timber been peremptorily forbidden.

From that time, however, the employment of bricks has steadily advanced, till now the consumption is so large that numbers are annually imported; and though between the seventeenth and eighteenth centuries the age of stone succeeded, and under Inigo Jones and Sir Christopher Wren, a vast number of stately piles were reared in every part of the kingdom, the demand for bricks never ceased. In Scotland, where stone is everywhere abundant and proportionately cheap, bricks are comparatively little used—the houses of the poor as well as of the wealthy being nearly everywhere built of stone, and in many instances with an amount of solid ornamentation in the form of porticos, pilasters, frieze, and entablature, which in England is generally produced by hollow brick columns, and plaster of Paris embellishments.

Whether the external framework was of brick or stone, it was found impossible to dispense entirely with wood in the erection of buildings, no matter what their size and character. It is true that an improved system of architecture had taught the builder how to reduce that expensive article, timber, to a minimum quantity; still a certain amount was necessary to form the skeleton or carcass. Between the upright,* transverse, and oblique posts and beams forming this skeleton, and indicating the position of doors, flooring, and windows, the layers of brick or stone were placed, till the walls of the structure were raised to the intended height of the roof. It was here, and in the rafters of the floors, that the great economy in the new style of building principally took place; for the builder found that he could obtain lightness and increased strength at one-third of the former material, and that by merely placing his beams edgeways. The great saving, however, was in the roof: this portion of the early Tudor house was a most elaborate and noble structure; and running the whole length of the great hall, or main building, looked like the hull of a line-of-battle ship reversed; the immense beams and flying buttresses, often elaborately carved and heightened with heraldic devices, imparted an imposing grandeur to these rich and open roofs, often deriving a domestic or historic interest from the battle-rent or time-stained banners—records of many a hot and stubborn fight—that drooped in dingy grandeur from the fretted groins or emblazoned spandrels high over the heads of the carousing guests.

The modern roof varies greatly, according to the nature of the structure it covers, but whether complex or simple in construction, is in any case always strong, though, when compared with the old-fashioned roof, remarkably light, except where weight is necessary to the safety or solidity of the walls on which the framework of the roof simply rests, unfastened, being kept in its position by the weight of the girders, and the superstructure of the beams and slates

With a knowledge of bricks, the Romans taught the Britons how to make tiles; but this art, like all other proofs of civilization, was swept away and lost in those ages of night and barbarism which succeeded the departure of the Roman legions from Great Britain. How the resuscitated art found its way back to this country we have no satisfactory evidence; but in the ninth century tiles appear to have been occasionally used as a roofing for churches and a few houses of importance; and though three centuries later, in the time of Henry III., small red tiles, oval or round, were often employed for the houses of the knights and gentry, thatch, except for churches and public buildings, seems almost everywhere to have been adopted; for even in London—down to a much later period—many wealthy citizens' houses were merely roofed with straw.

When slate first came into vogue as a roofing material is equally uncertain, though, from the abundance of the article in England and Wales, there is no doubt that its importance for that purpose was early appreciated; yet if we bear in mind the huge blocks of unshaped timber, and the uneven and warped beams used for roofs, we shall not be surprised to find tiles preferred to the flat and formal slates which required a methodical plane or perfect line to make the roof uniform, strong, and resistent to water. Having raised the walls of the house, whether of brick or stone, and, according to the wealth or taste of the owner and the style of the building, roofed the carcase with slate or tiles, we shall pause for a few moments, and reserve the completion of the structure to another journey, contenting ourselves by observing that in the middle ages it was customary, especially on the Continent, for men of substance, to spend large sums on the adornment of the roofs of their town houses—either having them covered with sheets of tin or copper, or some highly gilt metal, so that in the sun the light was flashed from these glittering roofs with almost blinding brilliancy. In Moscow, Constantinople, and other Eastern cities, the practice of gilding the roofs of churches, mosques, or palaces, or overlaying the framework with sheets of metal, is still very generally adopted.

GARDENING FOR NOVEMBER.

The Flower Garden.—Tulip and hyacinth planting, and the planting of bulbs generally, comes on this month, and by right should all be completed. Where there is any ground-work in hand, the best haste should be made while the frost and wet keep off, for either of them coming on to excess will altogether stop the progress of the work. All the falling leaves all over a place should be swept up carefully and removed to a heap, where they may be ready for use as a fermenting material for making hotbeds, or to rot into mould, which is valuable, as there is not a more useful thing in the garden economy than vegetable mould. All the waste of the garden should be thrown together, and allowed to rot for the same purpose; and whatever you have of the kind already decayed should be esteemed as the finest dressing you can apply. Tulips.—Plant the best bed the first week, six inches apart, three inches deep to the crowns, and seven plants in width; arrange them properly in their boxes before planting,—the two outside alike, the two second alike, the two third alike, and the centre the only odd one. Form beds of hyacinths, diversifying the colours, the same distance and depth as the tulips are planted. Remove dahlias to their winter storehouse, which must be dry, perfectly secured from frost and also from heat. Rose stocks should be procured, and planted ready for budding and grafting. Roses should be planted this month, although it will do any time before March. Chrysanthemums.—Cuttings should be taken from the young root growth, as soon as they are two inches above the soil, all this month and next, and be potted singly in three-inch pots; they will make noble plants in the one season, if properly stopped and shifted.

Fruit Garden.—Wall-fruit trees should be pruned at this time. Cuttings of currants and gooseberries may be planted. All kinds of fruit-trees may now be procured and planted. It is impossible to select a better time, if the weather be moderately dry; but if wet it must be delayed, as it is impossible to do justice to a tree if planted while the ground is wet and clammy.

Kitchen Garden.—Some of the earlier crops (those which we may fairly call speculative) may now be got in. A few early beans and peas may be tried. Dressing and trenching, or digging all vacant spaces to be left rough, or its ridges to be mellowed by frost, prepares it for spring sowings. Hoeing between crops, earthing up, and clearing them from the lower leaves that are decaying, must be attended to. Clearing paths and the destruction of all kinds of weeds and vermin are self-evident duties. Cabbage plants may be put in, and celery must be earthed up from time to time; whole sets of potatoes may be planted, six inches deep, in a dry quarter.

There are three sorts of friends—friends who like you, friends who do not care for you, and friends who hate you.

HISTORY OF A STONE.

Has a stone any history? Aye truly, and a marvellous one too. The very object rejected by the divine as affording no evidences of design, becomes in the hand of the geologist a fertile subject for illustrating the truths of his science, and the being and wisdom of the Deity. What says the author of "Contemplations of Nature?" "There is no picking up a pebble by the brookside without finding all nature in connection with it." Hear, too, Lavater, about a less object than a stone: "Every grain of sand is an immensity;" and our immortal Shakspere himself talks of "Sermons in stones." Seeing, then, that the object is one worthy of notice, let me endeavour to tell you the history of a stone.

But what stone shall I take? Should it be a paving stone or a piece of a schoolboy's slate, a pebble off the beach, or a block of granite? It has often occurred to me that, if a stone could speak, it would make a most enchanting story-teller. I'm an old man now, but I remember the first time I thought so. It was in church and I was then a little boy. Purworth is a little town in Somersetshire; indeed, you might almost call it a very little town. Purworth church, however, is not a very little church, but it is a very old one. Even Tom Dunker, the sexton, says to visitors that he don't know its age, but he has heard as the Romans had some hand in it. Well, it does'nt matter, for it is not a nice church. It has always, I think, been a musty church. Every Christmas, I think, it gets damper, and smells worse, and makes one sleepier; and every time they get new parsons, they get slower and duller ones. When last I went there in 17— they had a little man for parson. He wore spectacles, and I was afraid of going to sleep for fear he should see me and shout at me, for he used to shout out in his sermon now and then just as if he wanted to waken the people that were asleep; but now they have a big parson, who has light hair and looks quite somniferous, and pretends to preach *extempore*, but has his sermon written in a little book like a pocket Bible. Well, you will say, suppose he has, what has that to do with stones? I'll tell you. Purworth church, as I said before, is an old church; and, therefore, has itself disfigured with all sorts of effigies, and carvings, and sepulchral monuments. Just over our pew (I call it ours still, though all who used to sit in it are dead except myself, and I don't live in Purworth) is a horrible marble face, and, glancing about the church on Christmas day,—for I had got tired of the Rev. Mr. Cove's mumbling—I chanced to notice this stone distortion. I knew it again, for I used to dream of it, and would scream in my sleep because it would go on enlarging itself till my powers of vision could only take in the wide extended mouth. I fell again into the old train of thought, and having gained in the course of my life a good deal of insight into it and other stones, I determined to write a history of this stone face.

I don't mean to tell of all the bridals, and funerals, and baptisms it may have witnessed, nor relate the lives of any of the infants it may have seen grow into grey-headed old men, nor give a memoir of the mason who carved it, nor indeed tell any of the scenes which may have passed before it since it came into its present position,—my history has nothing to do with these; but, rolling back the tide of time sweeping aside the dark curtain of the past, I seek to show you, from the history of this stone, some of the wondrous scenes of our world's antehominal life.

And first, of what is the stone composed? One day I rubbed the dust off the face, and found it wasn't white marble, but a sort of mottled stone. I remembered that in Chichester Cathedral and in Westminster Abbey, I had seen a similar substance employed; so when I got back to London, I inquired where it was found and all about it, and at length collected the information I am about to give you.

Many years ago — thousands and millions of years before the first man trod our globe, and when the globe itself had travelled round the sun more years than could be expressed by a whole line of figures—there flowed, through a country which then existed where the South of England and the English Channel now are, a wide and beautiful river. No oaks, or willows, or poplars, were to be seen along its banks, but groves of palms and ferns, and forests of pine-trees. Vast rafts of trees floated down, for it was a mighty stream, hundreds of miles long, and bore away with resistless force many spoils from the lands it passed through.

Crocodiles and turtles frequented its shores, and on the land lived reptiles so horrible in form and so vast in size, that I am afraid you will scarcely credit me when I tell you of them. One of them was called the Iguanodon. Its body was as massive in its proportions as that of the elephant. Its hind legs were about seven feet in circumference, its lower jaw was nearly four feet long, and contained a large number of fierce-looking teeth, while the whole length of the monster was some *seventy* feet.*

Nor was it, notwithstanding its immense size, devoid of enemies; the Megalosaurus, an animal about thirty feet long, but of fierce carnivorous habits, waged continual war on the herbivorous Iguanodon; fishes and shells teemed in the waters of the river, and dreadful reptiles, capable of flying, running, swimming, or diving, hovered round.

Such was one of the earlier scenes of our world's history. But what became of all these creatures? In obedience to a law of which we know scarcely more than that it exists, they all died—not one of them lives now—not one has left a descendant. The bones of the reptiles, or some of them, were carried down by the river, sank to the bottom, and were covered up by the silt and mud with which its waters were charged; the fishes became imbedded in a similar deposit; and, lastly, so did the *shells.* Why do I put an emphasis on the shells? I'll tell you. Because the mud in which these remains were embedded, after resting where formed for myriads of years, and having during that time undergone strange chemical changes—having, in fact, become limestone or marble, was at length raised up by some internal movement of the crust of the earth, and as STONE furnished busy man with the materials for adorning his temples, for beautifying his palaces, or recording the praises and virtues of his ancestors. In short, I found that the stone face was composed of conglomerated masses of petrified shells of snails which lived and died in the rivers that flowed through a country inhabited by the Iguanodon, and which now forms a portion of the mighty empire of Britain.

Say, has the face in the old church taught nothing? Say, has a stone no history?—W. POWELL, B.G.A.

VIOLETS.—Mr. Tiley, of Bath, says,—"The tree violet is perfectly hardy, and can be grown in open borders with success; it blooms freely twice a year, viz., from September to the end of October, also from the beginning of March to the end of May. The Neapolitan violet will be found to thrive in perfection, if treated in the way described in this treatise, for frames and pots, not being a hardy variety and seldom doing well in the open ground. The Russian Superb is also one of the finest of single violets, with very large flowers and long stems and most delightful fragrance; unfortunately it is not very hardy, but to have it in bloom in perfection during the winter months it should be planted out in a frame in the manner before noticed. The compost I always use and consider the best for potting violets is—one barrow of decayed turfy loam, half a barrowful of rotten-leaf soil, one-third of a barrow of rotten manure, one-fourth ditto of rough sand, and about one peck of lime and soot, the whole well turned and mixed together; the soot and lime will tend to the health of the plants, as well as destroy all insects, worms, &c."

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* "Petrifactions and their Teachings." By the late Dr. Mantell.

THE FARMER.

LIME IN AGRICULTURE.

Much has been written upon the use of lime in agriculture, and yet the subject does not seem to be fully understood: some persons need "line upon line," just as some soils need lime upon lime.

Lime is an element in all organic structures. The earthy portion of the bones in the higher classes of animals consists mostly of lime combined with phosphoric acid. The shells of the lower classes consist of lime combined with carbonic acid. All parts of the animal structure are derived from vegetables. Vegetables, then, must contain a considerable amount of lime, and as lime is not a constituent of the atmosphere, it must be contained in the soil.

According to Johnson's table, one bushel of wheat contains 6 and 2·5 oz. of lime, a bushel of barley 6 and 1·9 oz., oats 2 and 3·5 oz., a ton of turnips a little more than 8 lb., a ton of potatoes 28 lb., and a ton of clover 63 lb. These quantities vary considerably. This is especially true of wheat. When the soil is plentifully furnished with lime wheat contains a larger per centage. The skin of the grain is said to be thinner, and the flour whiter and finer and more glutinous.

In soils that consist largely of clay the benefit of lime is most obvious. It loosens the texture of the soil, and renders it less adhesive. It combines with acids, and thus sets at liberty other alkalies that may be contained in it. It is beneficial to soils containing large quantities of vegetable matter, as it appears to render such matters more soluble, and more useful to the living vegetation. Almost every crop that is cultivated is improved by it. It is said to be injurious to flax and hemp, rendering their fibre thinner, and more brittle. Compounds formed in the soil by lime are comparatively insoluble. Hence it is from three to six years before lime applied to the soil is exhausted. The hydrate of lime, or lime slaked with water, acts the most rapidly. Carbonate of lime produces the most permanent effect upon the soil. Light, dry, sandy soils, containing little vegetable matter, are not those which are most benefited by lime; such soils already contain an abundant supply.

There is one error with respect to the use of lime which should, by all means, be avoided; that is, the mixing of lime with the manure heap, whether in a fermenting or quiescent state. Ammonia abounds in animal manures, combined with phosphoric, carbonic, muriatic, or other acids. These salts of ammonia are decomposed by lime, which combine with their acids and expel the ammonia—an element which is of great importance to vegetation. Probably the best methods of applying lime are to spread it upon the soil before planting, and mix it in with the harrow, or to sow it as a top dressing, soon after the coming up of the crop.

Vegetables that contain, in a perfect state, a large amount of lime may attain their full size without an adequate supply, but they will not be perfect plants. Lime is an important ingredient in clover; it is found chiefly in its cuticle, or covering membrane. If this grass is grown upon a soil consisting mostly of vegetable matter, and, under the stimulus of animal manure, it will lodge or break down from its own weight, for want of the strength or stiffness which a due proportion of lime would impart to it. Potatoes contain a large per centage of lime, and there can be no doubt that for some years past those that have been raised under circumstances that precluded a sufficient supply of lime, have been more liable to disease than those that could obtain an abundant supply of it.

Potatoes that have grown in low land, where the soil consists largely of decayed vegetable matter, or which have been raised by animal manures, have been affected by the rot much more than those which have been raised on sandy soils, or by means of plaster, which is sulphate of lime.

Vegetables that are perfect in their organisation, that is, that contain all their normal elements in due proportion, will better resist disease when exposed to its causes, than those that are deficient in any one element—indeed, this remark may be made more general—it may be applied to all living organised beings. The more perfect they are in structure, and the more normal in growth and proportion, the more perfect will be their health, and the greater their power to resist disease. We hope not to be misunderstood. We would by no means intimate that the absence of lime has anything to do with the origin of the potato disease. We do not know that diseased potatoes have been subjected to chemical analysis, to ascertain whether they are deficient in this element, or that those varieties that are most liable to disease have been compared analytically with those that are less so. The solution of these questions merits the attention of the agricultural chemist, if it has not already received it. But we have no doubt that the dry, mealy potato contains more lime than the wet, soggy one—or that those that have grown on dry land with an abundant supply of lime have rotted less than those that have grown under other circumstances.

The analysis of soils and the analysis of plants requires to be carried on together.

The cultivator needs to know the composition of the plants which he proposes to cultivate, and the composition of the soil in which he proposes to cultivate them, that he may judge of the adaptedness of the one to the other, and be able to modify the soil to suit the demands of the plants.

FRESH-WATER SHRIMPS.

Wherever they are found the weeds abound with them. Take plenty of this weed and place it, shrimps and all, in a large wide-mouthed earthen jar. Just cover the weed with water, and tie a piece of cheese-cloth, or something which will afford free ventilation, over the top, and I have no doubt that they will travel a considerable distance. Of course the changing of the water a few times during the journey would promote the certainty of their arriving in good condition, as forty-eight hours is rather a long journey. I should, I think (supposing them to arrive alive and healthy), keep them in some inclosed place for a time, where they could, have fresh water, and keep it well supplied with fresh weed, until the stock had materially increased, so as to insure a fair chance of their being finally introduced to the river in sufficient numbers to do well and increase. Some perforated zinc plates or fine wire-sieving let into the sides of a well-seasoned trough or box, and defended on the outside by something coarser, to prevent the choking up of the apertures (which, it is needless to say, must be kept clean and open), will answer for this purpose, if sunk in a tolerably clear and rapid part of the stream; and the stock may be kept up in the box to feed the river with.

HINTS TO VOCALISTS.

Sit in a simple, unconstrained posture. Never turn up your eyes, or swing about the body; the expression you mean to give, if not heard and felt, will never be understood by those foolish motions, which are rarely resorted to but by those who do not really feel what they play. Brilliancy is a natural gift, but great execution may be acquired. Let it be always distinct, and however loud you may wish it to be, never thump. Practise in private music far more difficult than that you play in general society, and aim more at pleasing than astonishing. Never bore people with ugly music merely because it is the work of some famous composer; and do not let the pieces you perform before people not professedly scientific be too long. Be above the vulgar folly of pretending that you cannot play for dancing, for it proves that if you are not disobliging you are stupid. As regards singing, practise two or three times a day, but at first not longer than ten minutes at a time, and let one of those times be before breakfast. Exercise the extremities of the voice, but do not dwell upon those notes you touch with difficulty. Open the mouth at all times, in the higher notes especially, open it to the ears as if smiling. Never dwell upon consonants. When you intend to sing, read the words and see that you understand them so as to give the proper expression. Let all your words be heard; it is a great and common fault in English singers to be indistinct. Children should never be allowed to sing much or to strain their voices; fifteen and sixteen is soon enough to begin to practise constantly and steadily the two extremities of the voice. The voice is said to be at its height at eight-and-twenty, and to begin to decline soon after forty. Never force the voice in damp weather, or when in the least degree unwell; many often sing out of tune at these times who do so at no other. Take nothing to clear the voice but a glass of cold water, and always avoid pastry, rich cream, coffee, and cake, when you intend to sing.

ENQUIRIES ANSWERED.

FIRE KINDLER.—Take a quart of tar, three pounds of resin; melt them, bring to a cooling temperature, mix with as much sawdust, with a little charcoal added, as can be worked in; spread out while hot upon a board; when cold, break it into lumps of the size of a large walnut. The composition will easily ignite from a match, and burn with a strong blaze long enough to kindle any wood that is fit to burn.

SEEDS —Never retain the same kinds of seeds too long upon the land; at the end of three years it will generally deteriorate, and ought to be changed; change of seed always produces a change for the better in the crops. Heavy clay-lands will longest retain the seed pure; light loams and peat soils will sooner require the change. In selecting seed it should be ascertained, if possible, where, and on what kind of soil it grew; and select a soil of different quality to that on which it is to be sown. Never select seed from a rich soil to sow it on a poor; but prefer that from a poor soil to sow it on a rich. Always select seed well cleaned and pure, being strictly of the same kind; seeds of different kinds will vegetate at different times, and ripen at different seasons, which occasions serious loss and further deterioration of sample.

FORCING FLOWERS.—Always begin with a low temperature, such as a greenhouse; and when the growth has fairly begun, increase, until you have given them sixty-five degrees, with impunity. If roses were brought from the air, and placed in a temperature of sixty-five degrees, they would be spoiled; but bring them into forty degrees, and increase five degrees a week, and they will bloom finely. Rhododendrons, azaleas, and plants of all kinds, may be gradually brought to flower early; and when flowering is done, finish their growth without any check. Let them rest in the shade out of doors, and bring them into the house again early; they will force better every year with less heat and greater beauty, but they must be grown as carefully after the bloom is over as they were in forcing, and have plenty of water during the bloom and the subsequent growth.

TO KEEP POTATOES.—The cellar is the best place for them, because they are injured by wilting; but sprout them carefully, if you want to keep them. They never sprout but three times; therefore, after you have sprouted them three times they will trouble you no more.

COOKING ONIONS—It is a good plan to boil onions in milk and water; it diminishes the strong taste of that vegetable. It is an excellent way of serving up onions, to chop them after they are boiled, and put them in a stew-pan, with a little milk, butter, salt, and pepper, and let them stew about fifteen minutes. This gives them a fine flavour, and they can be served up very hot.

MORELLA CHERRY WINE.—Having picked off from their stalks the ripest and soundest Morella cherries, bruise them well, without breaking the stones, and let the whole stand twenty-four hours in an open vessel. Then press out all the juice, and for every gallon add two pounds of fine loaf sugar. Put this wine into a cask, and when the fermentation ceases, stop it close. Let it stand three or four months, then bottle it, and in two months more it will be fit to drink. Some crack the stones, and hang them, with the bruised kernels, in a bag, from the bung, while the wine remains in the cask.

IRISH CORDIAL.—To every pound of white currants stripped from the stalks and bruised, put the very thin rind of a large fresh lemon, and a quarter of an ounce of ginger, well pounded and sifted. Pour on these one quart of good old whisky; mix the whole up thoroughly, and let it stand for twenty-four hours in a new well-scalded stone pitcher, or deep pan (crock), covered closely from the air. Strain it off; stir in it, until dissolved, a pound and a quarter of pounded sugar, and strain it again and bottle it. This is an Irish recipe.

TO PRESERVE CIDER IN BOTTLES.—Good corks are highly necessary, and if soaked before used in scalding water, they will be more pliant and serviceable; and by laying the bottles so that the liquor may always keep the cork wet and swelled, will much preserve it.

SYRUP OF GINGER.—Steep an ounce and a half of beaten ginger in a quart of boiling water, closely covered up for twenty-four hours; then, straining off the infusion, make it into a syrup, by adding, at least, two pounds of fine loaf sugar, dissolved, and boiled up in a hot water bath.

TO CURE THE DISEASE IN APPLE-TREES.—Brush off the white down, clear off the red stain underneath it, and anoint the places infected with a liquid mixture of train-oil and Scotch snuff.

TO PRESERVE FISHING-RODS.—Oil your rods in summer with linseed oil, drying them in the sun, and taking care the parts lie flat: they should be often turned, to prevent them from warping. This will render them tough, and prevent their being worm-eaten; in time they will acquire a beautiful brown colour Should they get wet, which swells the wood, and makes it fast in the sockets, turn the part round over the flame of a candle a short time, and it will be easily set at liberty.

THE BEST SEASON FOR PAINTING HOUSES.—The outside of buildings should be painted during autumn or winter. Hot weather injures the paint by drying in the oil too quickly; then the paint will easily rub off. But when the paint is laid on during cold weather, it hardens in drying, and is firmly set.

TO KEEP INSECTS OUT OF BIRD-CAGES.—Tie up a little sulphur in a silk bag, and suspend it in the cage. For mocking-birds, this is essential to their health; and the sulphur will keep all the red ants and other insects from cages of all kinds of birds. Red ants will never be found in a closet or drawer, if a small bag of sulphur is kept constantly in these places

TEA, ECONOMICALLY.—Young hyson is supposed to be a more profitable tea than hyson; but though the *quantity* to a pound is greater, it has not so much *strength*. In point of economy, therefore, there is not much difference between them. Hyson tea and souchong mixed together, half and half, is a pleasant beverage, and is more healthy than green tea alone. Be sure that water boils before it is poured upon tea. A teaspoonful to each person, and one extra thrown in, is a good rule. Steep a few minutes.

SIMPLE REMEDIES FOR SCARLET FEVER.—"Open the bowels regularly every day with some mild aperient medicine, such as castor oil, senna, &c., and keep the patient at rest and comfortably warm; sponge the surface with tepid water two or three times a day; while it is hotter than natural, admit fresh air; live on a bland diet, such as a cupful of arrow-root, several times a-day; toast-water for common drink. Gargle made of strong sage tea, honey and alum, or borax, may be used from the commencement, if the throat is effected."—*Dr. T. P. Hereford.*

CORNISH AND DEVONSHIRE MODE OF MAKING BUTTER.—Put yesterday's milk in a pan of iron, tin, or earthenware (usually about 9 inches deep, and 14 to 18 inches in diameter); place on a slow fire; do not allow it to boil; but as soon as nearly boiling (which should require two hours), remove from the fire, and place on cold stone for 12 or 18 hours. Then skim the cream and make the butter with the hand, which will occupy from 10 to 40 minutes, according to circumstances well known to dairymen. The butter made in this manner, though, perhaps, greater in quantity, is not, in my judgment, quite equal in richness and flavour to that made from raw cream.

MOURNING. — Mourning for parents is usually worn with crape for six months, afterwards without crape for the same period. For a brother or sister six months; but in many cases a longer period. For an uncle or aunt three months; the same for a first or second cousin. No rule can be given with regard to returning mourning visits, it is, however, proper to wait a week or two after the calamity

CLOTHING OF INFANTS.—The principle laid down with regard to the clothing of sleeping infants may be applied to that of waking ones. Comfort must be studied; looseness and freedom of action for the chest and limbs must be attended to. The child must wear worsted footikins in cold weather, and, if it have a cool head, a calico cap—in particularly cold weather a flannel one. But, as a general rule, a child's head requires to be kept cool,—without a cap at all after the first few months, or when the weather is warm. When the head seems too warm, it must even be sponged with cold water. In the child the brain is soft and delicate in structure; it is in a state of development more rapid even than that of of the other organs of the body. It has been already stated that organs are most prone to disease when in action; hence children are particularly prone to diseases of the brain.

PAPER FOR ROOMS.—Pale coloured paper hangings will certainly be found the best. Rooms hung with, or painted, scarlet, are rich but very dismal—and invariably look less than if adorned with a light tint. They require also to be illuminated more and much earlier in the evening, than those with pale colours. Towards dusk scarlet appears black; let any person doubting this try the fact, by wearing a scarlet cloak or shawl, and look at it as the shades of twilight advance. Yellow, and buff, and pink, can be scarcely better discriminated by candlelight than can blue and green.

SERVANTS. — Never leave a good place because a little fault has been found with your work; it is a very great injury to a domestic to change her place often; she will soon have the name of being bad tempered, and besides, she cannot gain friends; you must remain some time in a family before they will become attached to you. And if you are, as is generally the case, out of employment for a week before you go to a new place, you lose your time, and often have to pay for board too: thus a loss of two or three weeks' wages is incurred, because you will not bear to be reproved, even for a fault. It is better to remain and behave so well that your mistress will acknowledge your excellence; which she will be pretty sure to do, if she finds you try to please her.

HERBS. — Every housekeeper who possesses a patch of ground, though ever so small, should have a few of the herbs which are in constant request for cookery or garnish; and this may be done mixed with flowers in borders, without in the least detracting from the beauty of a parterre. By this means the herbs will always be, at least, fresh, and in the greatest perfection, and the expense is so small (after the first purchase of the seed or roots) as to be scarcely calculable. Let the housekeeper look over her greengrocer's bills, and she will be surprised at the aggregate charge for herbs and such small gear as horse-radish, fennel, &c., in a month or a year.

GARDEN DRAINING.—Whoever contemplates planting out specimens of choice plants, about which there is the least doubt of hardiness, cannot be too careful of rendering the situation for them well drained: all superabundant moisture should pass through the soil readily, and be speedily carried away by the drainage below. And even with plants, whose hardiness is thoroughly established, attention to drainage will greatly add to the success.

FEED CATTLE REGULARLY.—We find that very many of our farmers feed their cattle more than they require to keep them in good condition, particularly oxen that do not work, and horses that stand in the stable most of the time, except occasionally, when the owner takes him out to go a short trip, or to do a light job. "Keep Dobbin eating," says the father, and the boys follow his injunctions implicitly, and his rack is replenished with hay as often as the father or sons pass by his stall, till he thinks it is a matter of course to have an additional amount of feed placed before him every time he hears anyone in the barn, and if not attended too, he gives them a call to quicken their memory. Much hay in this way is wasted—the horse selecting only a little of the most tempting, after his appetite is satisfied, and either pulling the remainder through the rack, under his feet, or else breathing on it so much as to render it unpalatable to him. Stock of all kinds should have their regular meals at fixed hours as much as a man, and be allowed to masticate and digest what they have eaten in the intervals. If they are continually fed at all hours and times, they will be continually expecting something, and consequently kept uneasy. They will thrive better on a less amount of hay and grain by the first method of feeding than by the last, and with less labour of attendance from the keeper.

GENERAL MANAGEMENT OF FRAME PLANTS.—In the case of frame plants, or plants requiring less warmth than a greenhouse affords, the preparation of the frame is a most important matter. The bottom should be firm and impervious to water, so that it may be kept as dry as possible, for which end it should slope in any one direction, so that water spilled in watering the plants may run into a gutter to be carried away outside the frame. The pots should stand upon a trellis a few inches from the floor; and this trellis is best made of narrow slips of wood, placed a little space apart. The sashes should be removed from such plants, whenever the temperature is as high as thirty-four or five, except it be raining (in which case they must be kept on to keep the plants dry), or the wind is very keen and nipping. In those cases, the sashes should be tilted in such a way as to admit as little of the wet or wind as possible. As the mild spring weather draws on, such plants as these require no protection whatever: at that season they bear our climate.—*Glenny.*

QUACK MEDICINES.—All dabbling in medicines is bad, with children as well as with adults. It may be laid down as a general rule, that no medicine is to be given without the order or sanction of a medical practitioner. In this country people are disposed to dose themselves too much, and at random. They go to the next "chemist and druggist's" for a "bottle of stuff," when they are ill. They might as well go to a dealer in artists' colours to have their portraits painted. There is reason for believing that a great many lives are sacrificed by persons trusting to treatment by druggists in the earlier stages of illness. In fact, a statistical reckoning at Manchester showed that a great many children perished through such a custom. It is particularly necessary that a proper medical authority should be consulted about little children. They cannot speak, and their complaints are only to be understood by a scientific investigator. As diseases in infancy often invade suddenly and make rapid progress, so are they capable, too, in many cases, of being suddenly checked. The administration of "sleeping stuffs" to children to keep them quiet is so positively injurious, that it cannot be spoken of in too strong terms of condemnation. In manufacturing places, where mothers have to leave their children much, the extent to which the poor little things are poisoned outright, or made sickly for life, it is painful to contemplate. Opium is the basis of "quieting" medicines. In a dose of five grains it has killed an adult. But, besides, it has so peculiarly powerful an action on children, that medical men venture only to give an infant the fiftieth or sixtieth part of the dose they would prescribe for a grown person in similar cases.

DIRECTIONS FOR PRUNING VINES.—1st. In pruning, always cut upwards, and in a sloping direction. 2nd. Always leave an inch of blank wood beyond a terminal bud, and let the cut be on the opposite side of the bud. 3rd. Prune so as to leave as few wounds as possible, and let the surface of every cut be perfectly smooth. 4th. In cutting out an old branch, prune it even with the parent limb, that the wound may heal quickly. 5th. Prune so as to obtain the quantity of fruit desired on the smallest number of shoots possible. 6th. Never prune in frosty weather, nor when a frost is expected. 7th. Never prune in the months of March, April, or May; pruning in either of these months causes bleeding, and occasions thereby a wasteful and injurious expenditure of sap. 8th. Let the general autumnal pruning take place as soon after the 1st of October as the gathering of the fruit will permit. Lastly. Use a pruning-knife of the best description, and let it be, if possible, as sharp as a razor.

PLANTING SHRUBS AND TREES.—When specimen trees and shrubs are to be introduced on the lawn or on prominent parts of the shrubbery, the preparation of the soil should be attended to with judicious care. In planting, the base of the stem should be quite even with, or in most cases above, the ordinary level of the ground; and when planted the tree should appear as though a little mound had been raised around the stem, but this must by no means actually be the case. The appearance should result from keeping the base of the trees elevated, and the soil being raised in such a manner as just to cover the roots. Generally speaking, shrubs in planting should be less elevated than trees. But no general rule can be given in this respect, except that in dry soils the elevation must be less than in moist situations, because in the latter the roots are more liable to suffer from an excess of water; in dry soils, on the other hand, the trees are sometimes liable to suffer from drought when too much elevated.

ACORNS AS CHIMNEY ORNAMENTS.—Half fill two hyacinth-glasses (white) with clear water, and having procured two acorns, thoroughly ripe, remove the cups from the fruit and pass a needle and thread through that end of the acorn which fitted the cup, draw the needle through a bung or cork, which must fit very tightly into the neck of the glass; tie the thread on the top of the bung long enough to suspend the acorn close to, but not to touch the water, and drop a little sealing wax on the thread where the needle has perforated the cork, so that all air may be excluded. During the early part of the winter the acorns will begin to grow, and when the green leaves touch the cork they may be planted in the ground: this method of early treatment will facilitate and hasten the growth three years. We should have stated that the glasses are to be placed on a mantel-shelf in a room wherein a fire is burning during the day (it is not required at night); also, that if the water should become green or turbid, it must be changed, otherwise they may be left undisturbed from the time they are placed in the glasses until they are planted.

WINTERING ROSES.—For the last five years I have wintered my roses, and with the best success, on the following plan. As soon as the frost or unfavourable weather sets in in the autum, I remove the more tender varieties carefully from the soil, and place them in a frame on a dung-bed, plunging them in sawdust, with a tolerable space between them, and leave them uncovered. But on the cold increasing, the frame is covered with planks, and in severe frost, over these is placed a covering of leaves. As often, however, as the cold moderates, and the thermometer reaches the freezing point or higher, the covering is removed, and the plants exposed to the atmosphere. The gradual decomposition of the sawdust producing a genial moisture, encourages the development of a quantity of fresh and vigorous roots, which would hardly have been formed had the plants been left in the cold frosty soil; and at the same time acting as manure, furnishes them with support. On the approach of mild weather in spring the plants are taken to the place they are to occupy during the summer. The holes are dug some time before beginning to plant, and filled with the soil in which the roses are intended to grow. For planting out, a cloudy, and, if possible, a rainy day should be selected. This simple procedure insures a vigorous growth and abundant bloom. I have never found any kind of rose injured by it, either from damp in the winter or from being moved every year. Even tea-roses, though so delicate, are uninjured.

PLANTS IN BALCONIES.—It is always best to have boxes for balconies, as when the pots are set without boxes on the leads, which soon become very hot from the sun, the roots of the plants are parched and withered up; and a similar effect takes place from the drying effect of the wind, when the pots are set on the bars of an open balcony. This is one of the reasons why plants bought in the streets and set in a balcony so very seldom last long; and why the buds so often drop off without expanding: they are grown in very small pots to save room: and when they are removed from the pits, in which they were kept in the nursery, to the leads or bars of a balcony, it is almost impossible to keep them alive, unless they are kept in boxes, or, as a substitute, in double pots. Boxes are, however, much the best; and even wooden ones, if made of good yellow deal, will last six or seven years, if not left out to rot in the winter. They should, indeed, be put away as soon as the family goes out of town. The plants which will bear exposure in balconies may be thus mentioned:—Alyssum saxatile, in pots; Arabis albida, in pots; Jonquils, in pots; Paper Narcissus; Polyanthus Narcissus; Pyrus (Cydonia) japonica, in pots; Stocks, of various kinds; Wall-flowers, in pots; Yellow-berried holly, in pots. The following kinds having been forced into flower, though they may be put into balconies, will require care:—Acacias, of various kinds; Cinerarias; Genista canariensis; Geraniums (Pelargoniums); Hydrangea hortensis; Hydrangea japonica; Linum fragans; Roses.

CUCUMBER FORCING.—Cucumbers in the middle of March, or sooner, may be had where a well-regulated heating apparatus exists, and this will produce all the effects desired, provided one can command the necessary amount of heat, both bottom and top. The latter being easiest attained, must not be allowed to range above 70° for cucumbers, and a certain amount of humidity given to it by placing vessels of water in such a way as to intercept the currents of dry heated air on its way into the pit or house; or, if the pipes be open and exposed, vessels standing on them will easily effect that object. In raising cucumber or melon plants, a rather brisk bottom heat is required, and that not too drying nor yet too humid: at the early period required for the fruit plants one had better plunge the pots containing the seeds in some fermenting heap, and, just as the cotyledons are breaking through the soil, remove them to the pit, where the atmosphere is more pure; a little contrivance will enable one to give them all the available bottom heat, about 80° or 85° not being too much—even 90° will do no harm, provided other things are favourable. Melon plants, to plant in the pit in May, may be reared in a dung frame prior to that time very easily; or they may be brought forward with the cucumbers, as at that period the seed vegetates and the plants grow with less trouble than earlier.—*Cottage Gardener.*

PASTIMES AND FEATS ON THE ICE.

SKATING.

THIS invigorating, graceful, and healthy pastime seems to have been entirely unknown to the ancients, to whom we are in the habit of referring as the inventors or teachers of all our works of art, recreation, and amusements. That neither the Syrians, the Greeks, or the Romans, should have handed down any knowledge on skating or other of our winter pastimes is by no means a matter of surprise, when we bear in mind their geographical position. And though the white-capped peaks of the Armenian and Caucasian Alps might have made them remotely acquainted with snow, ice in the form of glaciers and frozen sheets of water was a phenomenon beyond their knowledge and comprehension. Though with the Romans the sight of frost and snow were objects more familiar, ice seldom lasted for any length of time so as to be either an inconvenience or an obstruction, it was consequently not till the advent of the hardy Scandinavian, and the landing of the Dane and Norwegian in Britain, that the knowledge of how to make a safe and rapid highway of the ice-bound river or the snow-covered plain was first imparted to the Anglo-Saxons.

In Norway only, where change of manners and fashions move with snail-like torpidity, and where the dress and customs of the peasantry are as primitive now as in the fifteenth century, can we expect to find a true picture of the mode of snow-travelling, as practised in the seventh and eighth centuries. So expert is every Norwegian in the use of his snow-shoes—long canoe-shaped skates, into the hollow centre of which his foot is strapped—that he can with ease ascend or descend hills, advance, retreat, or wheel round with the greatest facility. In consequence of this means of progression, so necessary in the long winters of the Scandinavian countries, that the armies of Norway and Sweden are supplied with these highly useful articles, and when the troops of other states are obliged to go into winter quarters, those of these kingdoms can keep the field through the whole year. In former times, when these two states were at war, a force of twenty thousand men was led in the depth of winter across the Norwegian Alps, and descended in order of battle on the frozen plains of Sweden. The manner in which these hardy soldiers manœuvre, skirmish, advance, scatter, retreat, re-form, and charge in compact order, over frozen lakes or plateaux of hardened snow, is one of the most surprising and interesting sights connected with the military affairs of Norway. Next to the Scandinavians, the Dutch are probably the most expert, though not the most graceful skaters in Europe. In Holland, men, women, and children, from the highest to the lowest, make use of the frozen rivers and canals as public highways for business, recreation, and pleasure. The child, with satchel and slate, skates to and from school; the farmer's wife, with a basket of eggs on her head, and one on either arm with butter and poultry, skates to the market with her dairy produce; gentlemen arm in arm, and ladies hand in hand, pay their country visits, and go for miles sailing down the long canals on their iron shoes. On the Rhine and Danube, numbers of students make up wine parties in the winter months, and proceed to a neighbouring town or favourite hotel, three, four, or five leagues off, returning home by moonlight, each one grasping a portion of a long pole, which answers the double purpose of keeping the party in a line, and, should one stumble or go through a treacherous piece of ice, dragging him instantly out from the very momentum with which they travel. The reproach that was formerly cast at the English for their indifferent and awkward skating is no longer merited, for displays of the most graceful and complicated feats of skating may now be witnessed in every part of the kingdom, when the weather admits of it, that may challenge Europe to surpass. Indeed, the torchlight displays occasionally seen in our metropolitan parks are as extraordinary as they are beautiful. As a calisthenic exercise, imparting vigour to the system, strength and elasticity to the muscles, and displaying the figure to the greatest possible advantage, skating is one of the most admirable of our health-giving pastimes, but it is one in which, to obtain perfect proficiency, the learner must begin at the earliest youth—indeed, from childhood. An adult may acquire a certain amount of freedom and confidence when he begins after twenty to learn to skate, but he will never obtain the ease and grace that constitute the charm and beauty of the art. So long as there is the slightest fear or apprehension of a fall, there will be constraint and awkwardness in the skater's gestures. Much objection has been made to the form of skate used in England, as being too much curved, and thereby bringing the skater round on the outside upon a quick, small circle; whereas, by having them less curved, he has the command of his stroke, and can enlarge or diminish the circle according to his own wish; the best shape, therefore, is *nearly* straight until it reaches the curve beyond the toe. Another great defect is the *depth* of the iron; the wood cannot be too near the ground, so long as it is kept clear from contact with it. To fasten the skate to the heel of the boot, a peg should be used; a heel-strap passing from the wood, and buckled above the instep, with two other straps, one passing behind and the other before the ball of the foot, will be sufficient to secure the skate firmly to the foot.

The following instructions contain all that can be practically taught on the subject of skating; close attention to the motions and carriage of a good skater will afford more information than a book full of elaborate directions.

As to the mode of using them, we cannot do better than quote the following instructions given by a member of the Edinburgh Club, who had devoted special attention to the subject:—"Those who wish to be proficient should begin at an early period of life, and endeavour to throw off the fear which always attends the commencement of an apparently hazardous amusement. They will soon acquire a facility of moving on the inside; when they have done this, they must endeavour to acquire the movement on the outside of the skates, which is nothing more than throwing themselves upon the outer edge of the skate, and making the balance of their body tend towards that side, which will necessarily enable them to form a semicircle. In this, much assistance may be derived from placing a bag of lead shot in the pocket next to the foot employed in making the outside stroke, which will produce an artificial poise of the body, which will afterwards become natural by practice. At the commencement of the outside stroke, the knee of the employed limb should be a little bent, and gradually brought to straight position when the stroke is completed. When the practitioner becomes expert in forming the semicircle with both feet, he is then to join them together, and proceed progressively and alternately with both feet, which will carry him forward with a graceful movement. Care should be taken to use very little muscular exertion, for the impelling motion should proceed from the mechanical impulse of the body thrown into such a position as to regulate the stroke. At taking the outside stroke the body ought to be thrown forward easily, the unemployed limb kept in a direct line with the body, and the face and the eyes looking directly forward; the unemployed foot ought to be stretched towards the ice, with the toes in a direct line with the leg. In the time of making the curve, the body must be gradually and almost imperceptibly raised, and the unemployed limb brought in the same manner forward; so that, at finishing the curve, the body will bend a small degree backward, and the unemployed foot will be about two inches before the other, ready to place on the ice, and form a corresponding curve. The muscular movement of the whole body must correspond with the movement of the skate, and should be regulated so as to be almost imperceptible to the spectators. Particular attention should be paid to carry round the head and eyes with a regular and imperceptible motion; for nothing so much diminishes the grace and elegance of skating as sudden jerks and exertions, which are too frequently used by the generality of skaters. The management of the arms likewise deserves attention. There is no mode of disposing of them more gracefully in skating outside than folding the hands into each other, or using a muff. There are various feats of activity and manœuvres used upon skates, but they are so various we cannot detail them. Moving on the outside is the primary object for a skater to attain; and when he becomes an adept in that, he will easily acquire a facility in executing other branches of the art.

KEEP TO YOUR CALLING.

A YOUNG man who commences his life with not liking his business has no very promising prospect before him. Let such a one believe himself to be under the immediate influence of "an evil eye," and set about releasing himself at once by a resolute refusal to entertain any thoughts but such as appertain to the duty clearly before him, and how to do it well and honestly. It is a great mistake to be possessed with a fanciful idea of advantage to be derived from any other calling than the one which circumstances have combined to impose on him, as an introduction to the busy responsibilities of life and manhood. How many have made shipwreck of their fairest hopes by feebly giving way to the delusion of being meant for better things than working at a bench or keeping a shop! To be above one's business is a mean pride that has its origin in indolence, betokens a dishonourable career, and an end in bankruptcy.

HOW TO GET CONTENT.

THE best remedy for discontent is to try and estimate things at what they are really worth. You should remember that Rothschild is forced to content himself with the same sky as the poorest mechanic, and the great banker cannot order a private sunset, or add one ray to the magnificence of night. The same air swells all lungs. Each one possesses really only his own thoughts and his own senses, soul and body—these are the property which a man owns. All that is valuable is to be had for nothing in this world. Genius, beauty, and love are not bought and sold. You may buy a rich bracelet, but not a well-turned arm to wear it,—a pearl necklace, but not a pretty throat with which it shall vie. The richest banker on earth would vainly offer a fortune to be able to write a verse like Byron. One comes into the world naked and goes out naked; the difference in the fineness of a bit of linen for a shroud is not much. Man is a handful of clay, which turns quickly back again into dust.

THE MONEY WE SPEND.

A BOOK has lately been published which is a perfect marvel, and has taken the public by storm. Thousands of copies have been sold, and thousands will continue to sell, because the book tells a true history of a penny which became a thousand pounds. It appears that some years ago a small tradesman became impressed with the productiveness of a penny, if set apart from the general risks of business, turned to a profit and allowed continually to grow by the augmentation of its own profits, which were not to be diverted under any circumstances until a certain sum had accumulated. In a few years, by earnest determination and discreet management, the penny grew to the important sum of one thousand pounds!

One element of great importance in the penny is this, that although it is a coin of small value, it is divisible into four parts; and as in most matters of trade there are either three or four divisions of cost and profit (generally four), the penny has become the most universal of all coins. The three or four divisions of the penny may be thus exhibited:—

Raw Material, two parts.
Labour, one part.
Profit, one part.

Or otherwise:

Raw Material, one part.
Labour, one part.
Wholesale profit, one part.
Retail profit, one part.

Most matters of trade will be found to be subject to these elements of division in reference to the cost of production, and the division of profit.

The penny, possessing these convenient properties of division, is also a coin which, from its small value, is widely current. It is the coin of the million. It weighs down the till of every shopkeeper; it is counted and packed in paper every Saturday night, because the heap in which it has accumulated has become so large; it is the coin which the gentleman gives to the crossing-sweeper, which the rich man throws to the beggar, which the old lady gives to the child. We have penny postage, penny newspapers, penny reading-rooms, penny ink, penny blacking, penny loaves, penny banks, penny clubs, penny schools, penny mechanics' institutions, penny shows. In fact, there is no article of trade which is conveniently divisible into small quantities, of which a "pennyworth" may not be had; and there are few sources of recreation which have not, in their humbler forms, been offered to the people at the price of a penny. You may send a letter from London to John o'Groat's—there shall be a splendid palace to receive the letter, servants in livery to take it in charge, and put the stamp of authority upon it, it shall be taken from this place by horses panting from their speed, and it shall be received at another palace, by other servants, in another livery, who shall link it to a monster, whose breath is steam, and whose food is fire. Away it goes at a speed as swift as that of the bird. All the night through it is flying onward. The day breaks, the letter has reached its destination; your friend, three hundred miles away, is now reading that which, twelve hours ago, you were writing. The price you pay for this is *a penny*. It is a striking illustration of the power of the penny. Every time you waste a penny, you throw away a power by which you might have sent servants with a letter from London to the Land's End.

Again: This world is shaped like a ball; its diameter is 7,900 miles people of different habits, speaking various languages, and having institutions varying more or less from each other, populate a great part of its surface. But water and space divide the nations of the earth. Paris is 500 miles from London; St. Petersburg, 1,620 miles; New York, 3,000 miles; Australia, 13,000 miles. But there are steam-ships crossing the seas; and there are railway locomotives waiting the arival of the ships; and there are wires pervading the earth, that speak, in mysterious tongue, to the people of one nation of what those in the other nation are doing. The tongue is like that of forked lightning, which touches the heavens and the earth at the same moment, and seems to bring them both together; and there are men who wait upon this tongue, and who watch the departure and the arrival of those ships, and of the locomotive that stands panting to pursue its course. And there is another monster whose breath is steam, and whose food is fire; and men with thoughtful brows and busy fingers wielding the potent pen, who attend upon this monster;—for he has acquired the power of talking to the multitude by signs and symbols, and telling them what the ship has brought from the opposite surface of the world; what the wires have said to have transpired only a few hours ago in another zone; and what the locomotive has gathered in his brief visits to a hundred places along his line of travel; and what the men of thoughtful brows think of the doings of the world. In the morning, at your breakfast table, a paper is laid before you, in which, as in a mirror, you see the movements of the world reflected; you not only read the faces, but the hearts of men. This costs you *a penny*. Ship, locomotive, electric wires, printing machines, and man, have all been at your service, and the price you have paid has been *a penny*. Whenever, therefore, you waste a penny, you sacrifice that which was equal to the power of communicating with France, St. Petersburg, New York, Australia, the world!—*How a Penny Became a Thousand Pounds.* (Price 1/6.)

THE WISDOM OF OUR ANCESTORS.

Sir Thomas Browne, in his *Pseudodoxia Epidemica*, or *Enquiries into very many received Tenets and commonly presumed Truths*, speaks thus of our immoderate respect for "venerable antiquity:"—"But the mortallest enemy unto knowledge, and that which hath done the greatest execution upon truth, hath been a peremptory adhesion unto authority, and more especially the establishing of our belief upon the dictates of antiquity. For (as every capacity may observe) most men of ages present so superstitiously do look on ages past, that the authorities of the one do exceed the reasons of the other. Whose persons indeed being farre removed from our times, their works, which seldome with us passe uncontrouled, either by contemporaries, or immediate successors, are now become out of the distance of envies: and the farther removed from present times, are conceived to approach the nearer unto truth itself. Now, hereby, methinks we manifestly delude ourselves, and widely walk out of the track of truth."

One of the most mischievous forms which this reverence for authority assumes is, when what we are pleased to call "the wisdom of our ancestors," "the wisdom of ages," "venerable antiquity," is thrown in our teeth to prevent any discovery in science, or in art, in philosophy, or in legislation, from being adopted by us in modern times. This phrase, "the wisdom of our ancestors," and the prejudices it fosters, has sent some men to the stake, and others to the dungeon: it brought on Galileo the vengeance of the Inquisition; it called Harvey a dreamer, and Jenner an innovator; it mocked at Adam Smith, and sneered at Bentham; but the very phrase itself contains a fallacy as false as it is mischievous. To speak of the early days of the world as its old days, is the same as if in speaking of an individual man we were to dilate on the venerable antiquity of his babyhood, and yield with deference to his wisdom while yet in long-clothes, and the full enjoyment in the pap-spoon. What is called "venerable antiquity" was, in truth, the young days of the world; the days of its inexperience and ignorance, full of error and credulity. We, in this present age, are far older than they, more experienced, less credulous. We possess not only such knowledge and experience as our ancestors possessed, but also the accumulated knowledge and experience of all thinkers from the very earliest ages of the world. Whatever advance in human thought or in human knowledge any individual man of past times has made, has come down to us. Whatever errors the ignorance or credulity of past times has fostered, are gradually disappearing before the older experience. The facts of the past times are valuable, the more valuable often, as teaching us what to avoid. The opinions of the past ages are frequently worthless, from the insufficiency of the facts upon which these opinions were founded. To apply these opinions to events of the present time would be like pronouncing judgment without evidence; for the circumstances under which the opinion was formed, the habits of life, the wants and requirements of the age, are totally different and distinct from what they are when the opinion is to be acted on; and to prefer "the wisdom of our ancestors" to the knowledge of the present day is wilfully to close our eyes against evidence, to shut out that which is complete and efficient, and to adopt that which is vague, imperfect, and null.

If "the wisdom of our ancestors" is implicitly to be relied on, to what age of the world would they refer us for perfect wisdom? Would it be enough, or too far, to go back to the times of the ancient Britons? Would they wish us to dwell in wattled huts, and walk about with painted bodies and skin coats? Would they have us change our steam-boats for coracles, and our locomotives for war-chariots? Would they convert our bishops into Druids,—and send out the Archbishop of Canterbury with a golden knife to cut the sacred misletoe; and the Bishop of

Exeter to preside over the human sacrifice? Yet such was the "wisdom of our ancestors" in those days. But, perhaps, as the "laudatores temporis acti," the great upholders of the "wisdom of our ancestors," are deeply enamoured of feudalism and its accompaniments, they may wish to stop at that period, ignore all its antecedents, and find true wisdom in the mail-clad knights whose pen was the pummel of their sword, who were innocent of all learning; when every house was a fortress, where "power dwelt amidst its passions;" when force was the sole guarantee for safety; when superstition, credulity, and ignorance, filled the land: when the nobles were highwaymen, and the people were slaves. This period seems to have been thought, by many of our writers, the golden age of England, venerable from its antiquity, wise beyond all comparison, and not only wise, but merry; for to those days we are constantly sent back when they would impress us with a notion of "merrie England." But let us look for a minute at the means of acquiring wisdom which existed even long after the time of the knights, when feudalism was drawing to its close, and printing was beginning to scatter the seeds of information about the world. A few meagre chronicles, the songs and romances of the troubadours, comprised almost entirely the literary food of the people. The *Nuremberg Chronicle* contains all that was then known of the history and geography of the world; and there we are told of sundry races of men then inhabiting the world, some with the horns and hoofs of goats; others with the heads of dogs, whose language is a perpetual bark; some with four eyes, others with but one, and that, like the Cyclops, in the middle of their forehead; others again with no heads, or rather, as Shakspere has it, "men whose heads do grow beneath their shoulders," the eyes being in the shoulders, and the nose and mouth in the breast; others again have necks as long as swans, with the beak of an eagle in the place of a mouth, and a nose like Lord Brougham's above it. Then some have a mouth so small that they are obliged to suck in all their nutriment through a reed; while others have the upper lip so large that it covers all their faces like a screen. Others again have only one leg, and a foot so enormous in size, that they stick it up in the air like an umbrella and go to sleep under its shade, and are, withal, so swift with this one foot that they easily run down the fleetest animals of the forest. Others wrap themselves up in their own ears, which are drawn in shape like those of a lop-eared rabbit, only large enough to cover the whole body of a man. Some had six hands, others six fingers, and others eight toes: all kinds of monstrosities are figured as representing the inhabitants of different parts of the earth; centaurs and pigmies are about the least outrageous of these conceptions, while the battle of the pigmies and the cranes is accepted as true history. And in the earliest travels that we have, the travellers confirm all these stories; there is not one of the monstrosities of the *Nuremberg Chronicle* that is not confirmed by Sir John Mandeville, a learned knight and physician, who spent thirty-four years in travelling through foreign lands. In fact, they all of them take the old story of Pliny, and repeat them without examination.

The description of the hippopotamus, from Sir J. Mandeville, will give us some idea of the manner in which the "wisdom of our ancestors" looked at nature. "In that contree ben many *Ipotaynes*, that dwellen sometyme in the Watre, and sometyme on the Lond: and thei ben half Man and half Hors, as I have sed before; and thei eten men when thei may take hem." But it is not to the human and the animal creation alone that these wonders are confined: Sir John Mandeville on his own experience gives us an account of the Well of Youth, which he tells us he visited and drank of its waters.* "And at the foot of that Mount, is a fayr Welle and a great that hathe the odour and savour of alle Spices; and at every hour of the day, he chaungethe his odour and savour dyversely. And whoso drynkethe three tymes fasting of that Watre of that Welle, he is hool of all manner of Sycknesse that he hathe. And thei that dwellen there and dryken of that Welle, thei never hav Siknoss, and thei semen alle weys zonge. I have dronken there of three or four sithes (times); and sit methinkethe, I fare the better. Sum men clepen (call) it the Welle of Zouthe (youth); for thei that often drinken there of, semen alle weys zongly and lyven without Syknesse. And men seyn that that Welle cometh out of Parodys, and therefore it is so vertuous." Sir J. Mandeville set out on his travels in 1322, not long after the close of the Crusades, when the gallant knights of chivalry were in their full vigour. From the nature of the stories which one of the most learned of their body, who had received all the advantages of foreign travel, has handed down to us, we may form a tolerably accurate opinion on the "wisdom of our ancestors" in those days, to which we are now so continually called upon to do homage.

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* We have preserved the original spelling as an example of the manner in which our ancestors of the 14th century wrote, and spoke, before the orthography of the language became fixed.

If they will not go back quite so far as the feudal times, perhaps they might find their ways of perfect wisdom in the stirring times of "bluff King Hal"—the glorious days of fire and faggot, when Protestant and Catholic were burnt at the same stake for deviating on one side or the other from the King's rule of faith; when queen's heads were not adhesive, but sat uneasily upon their shoulders; and princesses refused to become queens because they had only one neck, which they did not like to trust within the reach of the most amatory of kings. Or, perhaps, they might deem the awakening light of the reign of "good Queen Bess" the finest sample of the "wisdom of our ancestors," when many bright spirits shed a lustre around which has descended undiminished to our days, but which was unable to penetrate the dense blackness of those times,—when Shakespere was looked upon as a deer-stealer, and Spenser condemned "in sueing long to bide,"—when bear-baiting was held in higher estimation than the noblest poetry, and hobby-horses and tomfoolery were not confined to the Lord Mayor's day,—when queens rode in state upon a pillion, and maids-of-honour breakfasted upon salt beef and strong beer. Or, let us come down to the next reign, after Bacon had propounded the foundations of modern philosophy, and see the learned monarch of those times—the Solomon of his age—disputing on his two favourite themes of kingcraft and witchcraft; one moment laying down maxims for despotic rule, and the next teaching us how to discover a witch; one moment maundering over the divine right of kings, and the next drivelling over the eternal rule of demons. Under his sway old women by scores and hundreds were hanged, and burned, and drowned for riding through the air on broomsticks, whisking up chimneys, tormenting cattle, and giving fits to children. And even so lately as the reign of Charles the Second we find that very learned judge Sir Matthew Hale, giving as a reason for believing in the existence of witches, the very fallacy that we have placed at the head of this article. "The wisdom of all nations had provided laws against all such persons, which is an argument of their confidence of such a crime." Law and punishments, judges and juries, priests and exorcists, could not banish witchcraft from the thoughts and opinions of our wise ancestors; but in these modern times a few drops of printer's ink have sunk the whole brood into the Red Sea, never to rise again until an ignorance as dark as the "wisdom of our ancestors" shall spread itself over the earth.

By the "wisdom of our ancestors" credit was given to the existence of witchcraft, sorcerors, and ghosts, and judicial decisions were grounded on evidence attesting or supposing the existence of such facts. We have many stories relating the appearance of ghosts in courts of justice, which of course no one believes; but we have many trials in which the witnesses depose to facts which they allege they have received from apparitions. In 1754, Duncan Terig, *alias* Clerk, and Alexander Bane Macdonald were tried for the murder of Arthur Davis, sergeant in General Guise's regiment. The principal witness against the prisoners was a Highlander, who gave a distinct narrative of the appearance of the sergeant's ghost, which gave a very lucid account of the murder, and described the spot where the body was concealed. The jury did not convict on this testimony, for although they might have believed in the ghost, they could not reconcile themselves to this discrepancy, that the ghost of the sergeant, who had known no Gaelic in his lifetime, was obliged to use that language to be intelligible to the witness! Even so lately as 1832, we have evidence given in a trial, in the Highlands of Scotland, founded on a dream. A pedlar had been murdered, and his pack concealed. An individual took the officers of justice to a spot where he said a voice had told him in a dream, in Gaelic, that the pack would be found; and it was there discovered accordingly. Suspicion was naturally roused against the witness, but all attempts to discover the real ground of his knowledge were baffled. The accused was found guilty and executed. The last two examples of this kind of evidence is found in the most remote and ignorant part of Scotland. To use the language of Mr. Betham, we may say, "In effect, remote times are virtually present to us in remote places. The different generations of mankind, at their different stages of civilization, are at once present to our eyes. We may view our ancestors in our antipodes. In Japan sorcerers are still seen riding in the clouds. In Negroland witchcraft is even now the most common of all crimes. Half a century is scarce past since Hungary has been cleared of vampires. Wherever the ignorance is deepest, there we may see the reflex of the "wisdom of our ancestors."

Sir Thomas Browne, in the folio volume which we quoted at the beginning of this paper, published in the time of the Commonwealth, brought an immense mass of learning to bear on many vulgar errors which had passed for truth in the "wisdom of his ancestors;" and he gravely combats the opinions "that the sun danceth on Easter-day," that "crystal is nothing else but ice strongly congealed," that "a diamond is made soft or broke by the blood of a goat;" together with many others of like nature. The errors which Sir Thomas Browne exposed were for the most part physical and superstitious. The whole tribe of these might have been greatly increased, but these have long since disappeared: observation and science have so fully disclosed that the "wisdom of our ancestors" on these points was mere folly, that no one now-a-days sends us back to that wisdom for instruction. Authority and antiquity have yielded to reason and experience. "By no gentleman, honourable or right honourable, are we sent at this time of day to the 'wisdom of our ancestors' for the best mode of marshalling armies, navigating ships, or attacking and defending towns, for the best modes of cultivating and improving land, and preparing and preserving its products for the purposes of food, clothing, artificial light and heat; for the promptest and most commodious means of conveyance of ourselves and goods from one portion of the earth's surface to another; for the best modes of curing, alleviating, or preventing disorders in our own bodies, and those of the animals which we contrive to apply to our use."

In all matters of physical science the fallacy has been exploded. It is only when we come to matters of legislation that we find grave men gravely affirming that such and such an improvement must not be made because the "wisdom of our ancestors" had decided against it,—because it was unknown to "venerable antiquity,"—because "the authority of the past" was opposed to it. They cast aside the unquestionable maxim, that reason and not authority should decide the judgment; and would prevent the progress of the human race by chaining us down to the practices and institutions of our ancestors, hallowed by antiquity and illuminated by the light of ages. And why is this? Why does no one now venture to insinuate that in mechanics, in astronomy, in mathematics, in chemistry, we ought to rely on "the wisdom of our ancestors instead of direct and specific evidence, when, in questions of morals and legislation, of the well-being of the community, they would confine us to that narrow limit? It is because in these the sinister interests of men are allowed their full weight. All who are interested in the support of abuses—all who are desirous of keeping up institutions that are found to be pernicious—strive to put down reason by the voice of authority—to make the authority of ages past exceed the reasons of times present. They find that argument is failing them, that they cannot from their own stores successfully combat the reasons opposed to them, that their propositions are in themselves untenable, and they seek to gain support through the opinions of some by-gone age, and imagine that we are bound to surrender up our understanding to some venerable authority of olden times. They continually exalt the past for the express purpose of depressing and discouraging the present generation. They depreciate and contemn the great body of the people of the present day, while they idolise the ignorance of untaught, inexperienced generations, under the lofty title of "the wisdom of our ancestors."

EDUCATION AND EXERCISE.

The mind, as well as the body, is developed and strengthened, and all the muscles and organs of the system are increased in size, and rendered more perfect by frequent exercise. This is verified in the case of the blacksmith, whose right arm, by the daily use of heavy hammers, in forging and working iron, becomes larger and stronger than the arms of any other class of men. It is a general rule, applying to all classes of persons, that the limbs and organs, or part of the system most exercised, become the strongest. But the greater part of employments give a healthy exercise to nearly all parts of the human system, and tend to increase their strength and activity.

The more a person exercises his memory, judgment, or reasoning faculties, upon any particular subject, the more acute, accurate, and active the faculty exercised becomes; inasmuch as all the operations of the mind are carried on by means of the brain and nervous system, which consist of physical organs. When the mind has dwelt long upon any particular subject, the succession of ideas in the mind, from frequent occurrence and repetition, become associated together and form trains of thought, so that when the same subject is again introduced to the mind, the same succession of ideas and trains of thought will be suggested to it, and follow each other in their accustomed order. This association of ideas in the mind depends on the same cause, and is governed by the same laws, as the characteristic of the muscular and organic system usually called habit. No man can be a great general in modern times, since war has been reduced to a system, and become a very complicated science, unless his mind has been thoroughly disciplined by active service in the field, as well as by extensive reading and learning in mathematics, fortification, and military tactics. Nor can a man become a distinguished diplomatist, lawyer, orator, debater, or tactician, as a leader of a political party, without experience as well as learning in those several departments. learning alone is not sufficient; practice also is necessary. To make a great statesman, legislator, or judge, more mature judgment, and more various and extensive acquirements, observation, and reflection are necessary; but experience in either of those particular departments is not so important.

Luxury and indolence are the grave of talent. A person may be born with as much native talent as Julius Cæsar, Cicero, or Napoleon Bonaparte, and if cradled in luxury, and bred in indolence, unless he makes a total change of his habits (which is almost impossible), he must necessarily remain through life comparatively feeble and inefficient. He may, by means of his native genius, elegance of manners, and general information, acquired without reasoning much, be able to make a speech or address, upon the mere surface of things, that may tickle the fancy of a popular audience, and be effective for the moment; but to discuss great principles with ability, point out their tendencies, trace them to their ultimate results, and warn the public of the dangers attending them; or to originate and mature great and important measures for the benefit of his country, requires an enlarged wisdom, acquired by attentively observing the current of human events, much learning, deep reflection, and a well-balanced and well-disciplined mind.

Nor is discipline of mind in one department of science or business of as much importance in other departments, which are very different in their character, as many of the schools and schoolmen pretend. To play chess, many games of cards, and some other games of amusement well, requires science and discipline of mind as well as experience; and yet the science and discipline of mind thus acquired serve only to intoxicate the mind, and to divert it from and unfit it for any rational and useful employment. If these reflections are correct, they show the importance of "training up a child in the way he should go," and forming his habits of mind and body, and adapting them not only to the paths of virtue but to the pursuits which he is to follow through life. They show also the reason of the great difficulty and hazard of a man's changing his pursuits, after he has attained the middle age of life.

The same course of reasoning will apply to our moral, benevolent, and social feelings. They are quickened, increased, and strengthened by frequent exercise, in the same manner as our physical and intellectual faculties. Frequent attention to the wants and sufferings of the poor and unfortunate, serves to awaken, increase, and strengthen our benevolent feelings and sympathies for persons in distress, and to render them more quick and active. In order to cultivate the moral faculties, however, it is necessary to restrain our selfish as well as our malevolent passions. Moderation, and the restraint of violent passions and appetites, lie at the foundation of all virtue. A person of violent and unrestrained passions may have certain generous impulses, which may be called instincts, or propensities, but cannot be properly dignified with the title of virtues. One of the noblest acquirements of man consists in the power, which may become a fixed habit, of restraining his own passions, and giving a proper direction to his moral and social feelings. Even conscience can be cultivated, and generally depends upon the education, habits, and opinions of the person.

GIOTTO, THE SHEPHERD BOY AND PAINTER.

About forty miles from Florence, Italy, there lived a poor peasant, named Bondone. In 1276 he had a son born, whom he called Giotto. The father was an ignorant man, and he knew little else than to labour in taking care of his flocks of sheep.

There were no public schools in that country where children of the poor man, as well as those of the rich, could attend and obtain an education. Consequently, young Giotto was brought up in ignorance. But he was one of those boys that learn something from what they see around them.

In the country where Giotto lived, there were no fences and fields, such as we have, to keep the sheep and cattle from straying; hence it was necessary to keep some person with the flocks while they were feeding on the plains, to take care of them.

At the early age of ten, Bondone sent his son, Giotto, out to take care of a flock. This pleased the lad, for now the happy little shepherd-boy could roam about the meadow-plain at his will. But most of his time must be spent near the flock, and he was not long in devising some means to keep himself busy while there.

His favourite amusement soon became that of sketching in the sand, or on broad, flat stones, making pictures of surrounding objects, while lying on the grass in the midst of his flock. His pencils were a hard stick, or a sharp piece of stone, and his chief models the sheep which gathered around him in various attitudes.

The following story is related of the manner in which the genius of Giotto was discovered, and how he became a great painter·—

One day, as the shepherd-boy lay in the midst of his flock, earnestly sketching something on a stone, there came by a traveller. Struck with the boy's deep attention to his work, and the unconscious grace of his attitude, the stranger stopped, and went to look at what he was doing.

It was a sketch of a sheep, drawn with such freedom and truth of nature, that the traveller beheld it with astonishment.

"Whose son are you?" said he, with eagerness

The startled boy looked up in the face of his questioner. "My father is Bondone the labourer, and I am his little Giotto, so please the signor," said he.

"Well, then, little Giotto, should you like to come and live with me, and learn how to draw, and paint sheep like this, and horses, and even men?"

The child's eyes flashed with delight. "I will go with you anywhere to learn that. But," he added, as a sudden reflection made him change colour, "I must first go and ask my father; I can do nothing without his leave."

"That is right, my boy; and so we will go to him together," said the stranger, who was the painter Cimabue.

Great was the wonder of old Bondone at such a sudden proposal; but he perceived his son's wish, though Giotto was fearful of expressing it, and consented. He accompanied his boy to Florence, and left his little Giotto under the painter's care.

His pupil's progress surpassed Cimabue's expectations. In delineating nature, Giotto soon went beyond his master, to whom a good deal of the formality of Greek art, which he had been the first to cast aside, still clung.

One morning the artist went into his studio, and looking at a half finished head, saw a fly resting on the nose. Cimabue tried to brush it off, when he discovered that it was only painted.

"Who has done this?" cried he, half angry, half delighted.

Giotto came trembling from a corner, and confessed his fault. But he met with praise instead of reproof from his master, who loved art too well to be indignant at his pupil's talent, even though the frolic was directed against himself.

As Giotto grew older, his fame spread far and wide. Like most artists of those early times, he was an architect as well as painter. Pope Benedict IX sent messengers to him one day They entered the artist's studio, and informed him that the Pope intended to employ him in designing for St. Peter's Church, at Rome, and that he desired Giotto to send him some designs by which he might judge of his capacity.

Giotto was a pleasant and humorous man, and taking a sheet of paper drew, with one stroke of his pencil, a perfect circle. Then handing it to the messengers, he said to them, "There is my design, take that to his Holiness."

The messengers replied, "We ask for a design."

"Go, sirs," said Giotto; "I tell you his Holiness asks nothing else of me." And notwithstanding all their remonstrance, he refused to give any other

Pope Benedict was a learned man; he saw that Giotto had given him the best instance of perfection in his art, sent for him to come to Rome, and honoured and rewarded him. From this incident "Round as Giotto's O," became an Italian proverb.

The talents of Giotto won him the patronage of the great of his country He visited in succession Padua, Verona, and Ferrara. At the latter city he remained some time, painting for the Prince of Este.

While there, Dante heard of Giotto, and invited him to Ravenna. There, also, he painted many of his works, and formed a strong friendship with the great Dante.

The poor shepherd-boy was now in the height of his fame. Admitted into the society of the Italian nobles, enjoying the friendship of the talented men of his age—Dante, Boccaccio, and Petrarch—and admired by all, his was, indeed, an enviable position.

He was a good man as well as great; loved by all his friends; and, as his biographer, Vassari, says, "a good Christian as well as an excellent painter." He died at Milan, in the year 1336, and the city of Florence erected a statue in honour of this great artist.

THOUGHTS UPON THE WALL.

There are two kinds of beauty connected with natural and artistic objects; the one a beauty inherent and *per se*, the other a beauty of associated ideas and feelings. Some writers, of whom Mr. Alison may be considered the chief, have come to the conclusion that *all* our pleasures of taste, all our impressions of beauty, are grounded upon this principle of association. The entire correctness of this may well be doubted; but there can be no doubt of its being partially true, and that in all philosophical theories of beauty, this principle of association must be taken in as an essential element. A happy thing it is for us—a merciful susceptibility of our nature, that we are able sometimes to link a beautiful thought or feeling with but an indifferently beautiful object, and to extract, not exactly sunbeams from cucumbers, but sermons from stones, and good from everything. Powerful among this class of suggestive things are pictures in a room. They might do much for the rustic and the labourer; and not only for them, but for that immensely large class, also, who occupy the broad margin between the rich and the poor—the small-salaried clerk and inferior tradesman; a class who have to maintain a worldly appearance with marvellously little of worldly means. Expensive works of art are, of course, quite out of the question in homes like these. but there are such things as cheap prints, and paintings of moderate value, which, without any great merit of execution, exhibit a beautiful scene or incident, and exhale poetic influences to awaken holy associations of ideas.

We remember once, after a day of difficulty and sorrow, drinking tea in the parlour of a small neat dwelling in the suburbs of the metropolis. The walls were decorated with prints, framed and glazed, the whole value of which was, perhaps, not over £5, but which, owing to a pervading beauty of sentiment, was of more value to the looker on than many of the productions of the magnates of the artist world. We thought it very delightful, we remember, after a day of disappointment and care spent in London streets, amidst all its excitement and hurly-burly, its noise and confusion and feverish antagonisms, to repose the eye upon a coloured print representing a rural scene. It was on the shore of a lake in Switzerland; the time was evening, and the golden light of the declining sun glittered in a long path of glory over the calm water. Conspicuous on the mountain slopes, on its borders, rose a picturesque building, which seemed to be an old time-hallowed chapel, with ivy round its pointed windows and downy moss clustering on its roof and walls. A little below stood the scattered dwellings of the hamlet; the cattle wended homeward from the pasture, and a rosy maiden in lace boddice, standing on a knoll of the land, might be imagined as singing the Ranz des Vaches, and beckoning her herd to the homestead. Now, all this was done in a very plain and homely manner, and there was nothing whatever in the execution to throw an artist into ecstasies, or tempt him into comparisons with the masters, ancient and modern; but, for all that, there was a sort of blessedness about the humble picture—a suggestion of stillness and repose, a heavenly hush for both the struggles of the spirit and the toils of the body, peculiarly needful and appropriate to contemplate in contrast to the din and strife and soul-absorbing competition of the fevered city.

On one side of this picture hung a chalk drawing, very respectably done, a copy from some old head of the Redeemer, conceived as under suffering. Here the agonised, but patient and resigned, features led back the imaginative gazer, through a long vista of centuries, to the time when children clustered round the knees of Him who blessed them; when the high road to Jerusalem resounded with tumultuous "Hosannas,"—when the garden of Gethsemane witnessed His tears of agony, and the Hall of Judgment rang with the scoffs and insults of a brutalised rabble, whilst their unoffending victim "answered not a word." The whole sequence of that gracious life passes in review, from the disputations in the Temple to the bleeding on Calvary; and the heart that sinks under the sorrows and trials of the present time revives, and fortifies itself with courage in remembering his sufferings and the gentle heroism with which they were borne.

On the opposite side of the Swiss scene before described, hung a very fair print of Shakspere. This, again, was richly suggestive. That noble arch of forehead; those deep, full, eloquent eyes, that earnest mouth, all concur to testify that this was a MAN—a myriad-minded man. And when the mind recalls the immense variety of his creations, the versatility of his genius, the wondrous breadth of his observation and sympathy: when the awakened fancy unfolds its panorama of enchanted isles, forests of Arden, Windsor meads enlivened with the gaiety of merry wives; the rolling ocean bearing on its rough waves the cradle of the gentle Perdita, wild and blasted heaths and stormy battle-plains; Portia's villa, and the moon-lit bank where sounds of music crept into lovers' ears; Venetian banquets, glittering with light and sounding with music and revelry, where Romeo loved and Juliet gave her heart away the garden where they woo'd, and the tomb where they died. When the fancy envelopes itself with these scenes, and innumerable others, suggested by the portrait of Shakspere, does not the narrow thought swell into magnitude? Do not confined sympathies expand?—and does not a selfish fretfulness melt into a generous glow at the joys and sorrows of all humanity?

On an opposite wall of the room hung the representation of a large Indiaman, outward bound, struggling in a violent gale of wind. How sublime the terrors of the scene! The vessel on its beam-ends in a trough of boiling surge, the splintered masts, the torn fluttering sails, the dark night all around, with massive storm-clouds hurling from their black bosoms long, forky flashes of lurid fire! With such a picture do there not arise ideas of Him "who holdeth the waters in the hollow of his hand," "who maketh the clouds his chariot, and rideth on the wings of the wind?" What generous sympathies well from the heart towards the "wet sea-boy in an hour so rude," the brave mariner at the helm, the calm captain on the poop, the awe-struck passengers—some thinking of home and the tranquil life of their early days contrasted with their present danger—some stupified with terror, and some calmly resigned to death even in the dark gurgling water. 'Tis but fancy's sketch; but of such fancies beautiful emotions may be born.

There were other prints in the room, of more or less interest; but enough of description has been given to illustrate the moral suggestive value of pictures in the room. We mean, of course, pictures with a certain poetry of meaning about them; not flaring portraits of kings and queens and generals; not theatrical monstrosities, representing Mr. Wallack as *Pizarro*, or O. Smith as *Three-fingered Jack;* not disgusting representations of Tom Spring and Dutch Sam; not vulgar drawings of prize heifers and over-fed pigs;—none of these things, but prints, humble in character and inexpensive it may be, but with some pregnancy of subject, some suggestions of love and peace, and beauty and goodness, leading the beholder to endeavours to make life fairer in this world and fitter for a world to come.

INFLUENCES OF THE SEASON.

It is frequently remarked by many individuals that a conscious gloom comes over their minds in the autumn. The cause is attributed to the season, and not to themselves. The reason usually assigned for indulging in such feelings is, that the fading and falling of the leaves, betokening winter, had an effect on the mind, not easily resisted—an effect which, in all probability, the author of our natures wisely intended. Night and sleep are designed to remind us of death and the grave, so are autumn and winter. In this view, it is asked, how can we avoid sadness, and even melancholy?

Now, if the sadness here alluded to, is of a temporary, or rather a momentary impression—one which comes upon us, and remains just long enough to induce new reflections by which the heart is made better, and yet not long enough to affect health—then depressing autumnal influences should be hailed as messengers of mercy. But *habitual* gloom is neither wise nor necessary in autumn more than any other season. The mind may not, indeed, be as easily raised to as high a tone of cheerfulness as in May or June, yet much may be done to elevate it to a moderate degree of the same feeling.

The causes of this periodical tendency to sadness are numerous; but most of them are easily removed. We live in a region where the temperature is so changeable, that in order to enjoy life, we must learn to get acclimated many times a year. One of these seasons of acclimation recurs, usually, in autumn. The skin, during the long summer heats, has overacted; and now, suddenly, it is chilled and depressed, and its action, unless we are on our guard, is feeble. It fails, in part, therefore, to do its appointed work. The worn out and decayed particles, solid and fluid, which should be brought out and worked up into the fluid of perspiration, remain within, and even the blood is not fully purified. This, by our tasking some of the internal organs, clogs the wheels of the body, and whatever affects the body in this way has a tendency to affect and depress the mind.

From this condition there are two modes of relief. The skin should be so managed that it will perform its appointed work. Bathing and friction, as well as a moderate increase of clothing by night and by day, will do much to restore this important organ to its wonted activity and strength. Calling philosophy and religion to our aid, the mind should be forced to cheerfulness as fast and as far as possible. For our own sakes we should do this; but we must also do it as a matter of Christian duty.

Autumnal mental depression is, in no small degree, a consequence of repeated and gross violations of physical laws during the preceding summer. In a thousand ways, during this long and trying season, do we transgress these laws, for every one of which there is an appointed and an inevitable penalty. Among these sometimes fearful penalties is the tendency of gloom in autumn. It does not come by the arbitrary appointment of God, as some would believe. It comes by God's permission, and by man's appointment.

GILDING.

Gilding is performed in several ways, varying, of course, with the substance to be operated upon, though the principle is the same for all.

There are various kinds of gilding: 1st. *Oil gilding;* 2nd. *Japanners' gilding, or gilding with gold size*, and 3rd. *Burnish gilding*, which may be used on a basis of wood, metal, paper, or leather; but the two last require a different process.

Materials.—Gold leaf should be pure,